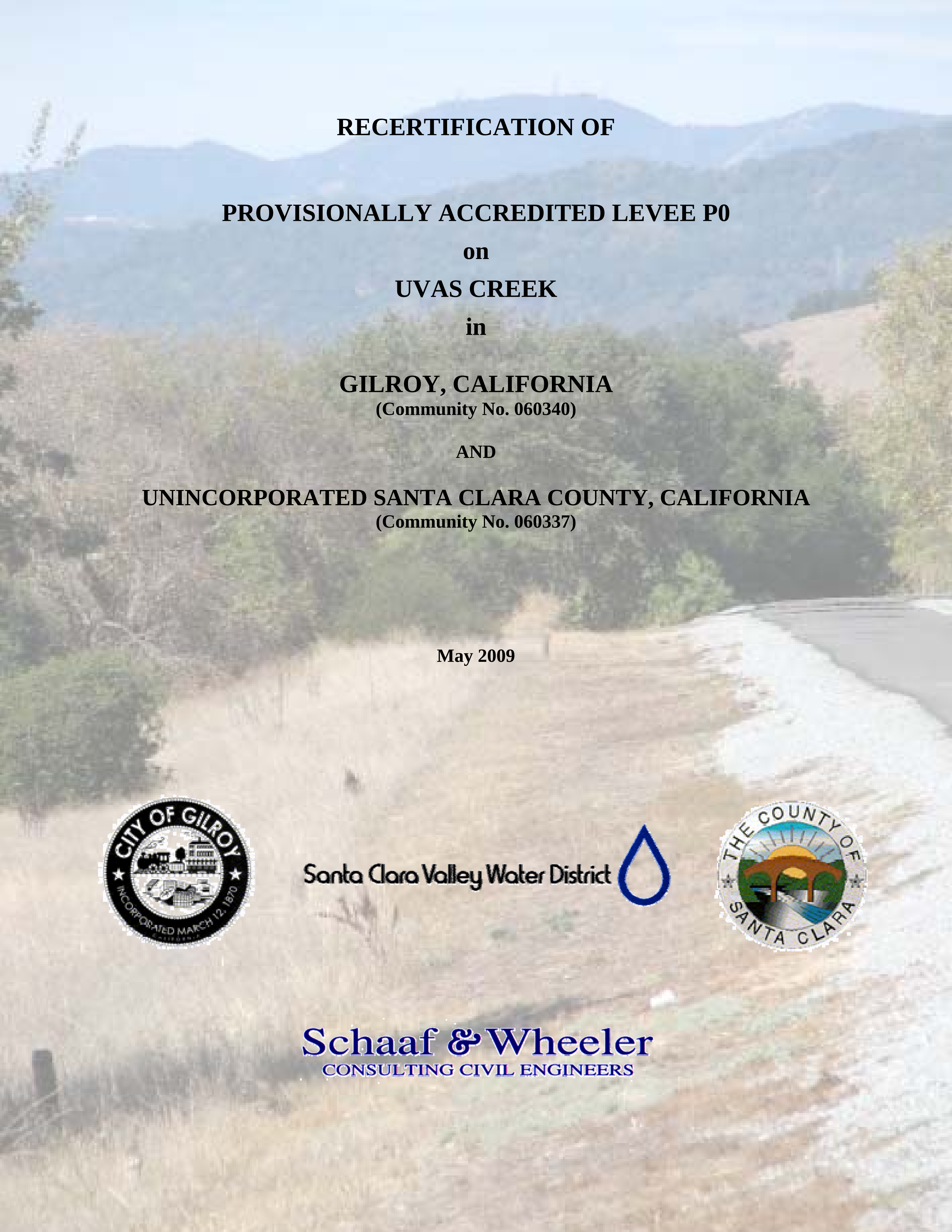

RECERTIFICATION OF

PROVISIONALLY ACCREDITED LEVEE P0
on
UVAS CREEK
in

GILROY, CALIFORNIA
(Community No. 060340)

AND

UNINCORPORATED SANTA CLARA COUNTY, CALIFORNIA
(Community No. 060337)

May 2009

Santa Clara Valley Water District

Schaaf & Wheeler
CONSULTING CIVIL ENGINEERS

Schaaf & Wheeler
CONSULTING CIVIL ENGINEERS

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(408) 246-4848
FAX (408) 246-5624
s&w@swsv.com

Offices in
Monterey Bay Area
Sacramento
San Francisco

May 28, 2009

Mr. Eric Simmons, CFM
National Flood Insurance Program
FEMA Region IX
1111 Broadway, Suite 1200
Oakland, CA 94609
(510) 627-7029

Subject: **Recertification of Provisionally Accredited Levee P0 on Uvas Creek in Gilroy and Unincorporated Santa Clara County, California**

Dear Mr. Simmons:

On behalf of the Santa Clara Valley Water District, the City of Gilory, and Santa Clara County I hereby submit the documentation and engineering analyses necessary to obtain full accreditation for Levee P0 from its end approximately 2,100 feet downstream of Thomas Road to Santa Teresa Boulevard in Gilroy. Levee accreditation affects parts of the City of Gilroy and unincorporated Santa Clara County. It is my professional opinion that the subject levees meet the requirements of 44 CFR §65.10.

Enclosed is an application for the recertification of the levee on the north bank of Uvas Creek, originally constructed by the United States Army Corps of Engineers in 1988.

Tab 1	MT-2 Forms 1, 2, and 3
Tab 2	Annotated FIRM and FIS Profile
Tab 3	Survey Information and LiDAR Metadata
Tab 4	Topographic Work Map
Tab 5	Record Drawings
Tab 6	Freeboard Evaluation
Tab 7	Engineering Analyses
Tab 8	Operation and Maintenance

Please note that an interior drainage analysis is not included since there is no area interior to the north bank levee. That is, ground elevations naturally fall away from the north creek bank as shown in the topographic information included in Tab 4.

The following documentation and analyses are bound separately and enclosed with this application:

Geotechnical Investigation (AMEC Geomatrix, 2009)

Digital HEC-RAS model on CD (Schaaf & Wheeler, 2009)

Thank you very much for accepting our levee recertification package for Uvas Creek in Gilroy. Please direct technical questions regarding this application to Liza McNulty or me.

Very truly yours,
SCHAAF & WHEELER

Charles D Anderson

Charles D. Anderson, PE
President

Enclosures

cc: Robert van den Berg, Santa Clara Valley Water District
Charlie Krueger, City of Gilroy
Chris Freitas, County of Santa Clara

TAB 1

U.S. DEPARTMENT OF HOMELAND SECURITY - FEDERAL EMERGENCY MANAGEMENT AGENCY

OVERVIEW & CONCURRENCE FORM

O.M.B No. 1660-0016
Expires: 12/31/2010

PAPERWORK BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 1 hour per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing, reviewing, and submitting the form. You are not required to respond to this collection of information unless a valid OMB control number appears in the upper right corner of this form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, U.S. Department of Homeland Security, Federal Emergency Management Agency, 500 C Street, SW, Washington DC 20472, Paperwork Reduction Project (1660-0016). Submission of the form is required to obtain or retain benefits under the National Flood Insurance Program. **Please do not send your completed survey to the above address.**

A. REQUESTED RESPONSE FROM DHS-FEMA

This request is for a (check one):

☐ CLOMR: A letter from DHS-FEMA commenting on whether a proposed project, if built as proposed, would justify a map revision, or proposed hydrology changes (See 44 CFR Ch. 1, Parts 60, 65 & 72).

☒ LOMR: A letter from DHS-FEMA officially revising the current NFIP map to show the changes to floodplains, regulatory floodway or flood elevations. (See 44 CFR Ch. 1, Parts 60, 65 & 72)

B. OVERVIEW

1. The NFIP map panel(s) affected for all impacted communities is (are):

Community No.	Community Name	State	Map No.	Panel No.	Effective Date
Ex: 480301 480287	City of Katy Harris County	TX TX	480301 48201C	0005D 0220G	02/08/83 09/28/90
060340	City of Gilroy	CA	06085C	0638H	05/18/09
60337	Santa Clara County	CA	06085C	0752H	05/18/09

2. a. Flooding Source: Uvas Creek

b. Types of Flooding: ☒ Riverine ☐ Coastal ☐ Shallow Flooding (e.g., Zones AO and AH)

☐ Alluvial fan ☐ Lakes ☐ Other (Attach Description)

3. Project Name/Identifier: Recertification of Provisionally Accredited Levee P0

4. FEMA zone designations affected: AE (choices: A, AH, AO, A1-A30, A99, AE, AR, V, V1-V30, VE, B, C, D, X)

5. Basis for Request and Type of Revision:

a. The basis for this revision request is (check all that apply)

☐ Physical Change ☐ Improved Methodology/Data ☐ Regulatory Floodway Revision ☐ Base Map Changes

☐ Coastal Analysis ☐ Hydraulic Analysis ☐ Hydrologic Analysis ☐ Corrections

☐ Weir-Dam Changes ☒ Levee Certification ☐ Alluvial Fan Analysis ☐ Natural Changes

☐ New Topographic Data ☐ Other (Attach Description)

Note: A photograph and narrative description of the area of concern is not required, but is very helpful during review.

b. The area of revision encompasses the following structures (check all that apply)

Structures: ☐ Channelization ☒ Levee/Floodwall ☒ Bridge/Culvert

☐ Dam ☐ Fill ☐ Other (Attach Description)

C. REVIEW FEE

Has the review fee for the appropriate request category been included?	☐ Yes ☒ No, Attach Explanation	Fee amount: $_____

Please see the DHS-FEMA Web site at http://www.fema.gov/plan/prevent/fhm/frm_fees.shtm **for Fee Amounts and Exemptions.**

D. SIGNATURE

All documents submitted in support of this request are correct to the best of my knowledge. I understand that any false statement may be punishable by fine or imprisonment under Title 18 of the United States Code, Section 1001.

Name: Liang Lee	Company: Santa Clara Valley Water District	
Mailing Address: 5750 Almaden Expressway San Jose, CA 95118-3614	Daytime Telephone No.: (408) 265-2607 Ext 2927	Fax No.: (408) 978-0156
	E-Mail Address: llee@valleywater.org	
Signature of Requester (required):	Date:	

As the community official responsible for floodplain management, I hereby acknowledge that we have received and reviewed this Letter of Map Revision (LOMR) or conditional LOMR request. Based upon the community's review, we find the completed or proposed project meets or is designed to meet all of the community floodplain management requirements, including the requirement that no fill be placed in the regulatory floodway, and that all necessary Federal, State, and local permits have been, or in the case of a conditional LOMR, will be obtained. In addition, we have determined that the land and any existing or proposed structures to be removed from the SFHA are or will be reasonably safe from flooding as defined in 44CFR 65.2(c), and that we have available upon request by FEMA, all analyses and documentation used to make this determination.

Community Official's Name and Title:	Community Name: Santa Clara County	
Mailing Address:	Daytime Telephone No.:	Fax No.:
	E-Mail Address:	
Community Official's Signature (required):	Date:	

CERTIFICATION BY REGISTERED PROFESSIONAL ENGINEER AND/OR LAND SURVEYOR

This certification is to be signed and sealed by a licensed land surveyor, registered professional engineer, or architect authorized by law to certify elevation information data, hydrologic and hydraulic analysis, and any other supporting information as per NFIP regulations paragraph 65.2(b) and as described in the MT-2 Forms Instructions. All documents submitted in support of this request are correct to the best of my knowledge. I understand that any false statement may be punishable by fine or imprisonment under Title 18 of the United States Code, Section 1001.

Certifier's Name: Charles D. Anderson, P.E.	License No.: CA C43776	Expiration Date: 6/30/11
Company Name: Schaaf & Wheeler, Consulting Civil Engineers	Telephone No.: (408) 246-4848	Fax No.: (408) 246-5624
Signature: Charles D. Anderson		Date: 6/04/09

Ensure the forms that are appropriate to your revision request are included in your submittal.

Form Name and (Number)	Required if ...
☒ Riverine Hydrology and Hydraulics Form (Form 2)	New or revised discharges or water-surface elevations
☒ Riverine Structures Form (Form 3)	Channel is modified, addition/revision of bridge/culverts, addition/revision of levee/floodwall, addition/revision of dam
☐ Coastal Analysis Form (Form 4)	New or revised coastal elevations
☐ Coastal Structures Form (Form 5)	Addition/revision of coastal structure
☐ Alluvial Fan Flooding Form (Form 6)	Flood control measures on alluvial fans

Charles D. Anderson
No. 43776
Exp. 6/30/11
Seal (Optional)

U.S. DEPARTMENT OF HOMELAND SECURITY - FEDERAL EMERGENCY MANAGEMENT AGENCY

OVERVIEW & CONCURRENCE FORM

O.M.B No. 1660-0016
Expires: 12/31/2010

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2. a. Flooding Source: Uvas Creek

b. Types of Flooding: ☒ Riverine ☐ Coastal ☐ Shallow Flooding (e.g., Zones AO and AH)

☐ Alluvial fan ☐ Lakes ☐ Other (Attach Description)

3. Project Name/Identifier: Recertification of Provisionally Accredited Levee P0

4. FEMA zone designations affected: AE (choices: A, AH, AO, A1-A30, A99, AE, AR, V, V1-V30, VE, B, C, D, X)

5. Basis for Request and Type of Revision:

a. The basis for this revision request is (check all that apply)

☐ Physical Change ☐ Improved Methodology/Data ☐ Regulatory Floodway Revision ☐ Base Map Changes

☐ Coastal Analysis ☐ Hydraulic Analysis ☐ Hydrologic Analysis ☐ Corrections

☐ Weir-Dam Changes ☒ Levee Certification ☐ Alluvial Fan Analysis ☐ Natural Changes

☐ New Topographic Data ☐ Other (Attach Description)

Note: A photograph and narrative description of the area of concern is not required, but is very helpful during review.

b. The area of revision encompasses the following structures (check all that apply)

Structures: ☐ Channelization ☒ Levee/Floodwall ☒ Bridge/Culvert

☐ Dam ☐ Fill ☐ Other (Attach Description)

C. REVIEW FEE

Has the review fee for the appropriate request category been included? ☐ Yes Fee amount: $_____

☒ No, Attach Explanation

Please see the DHS-FEMA Web site at http://www.fema.gov/plan/prevent/fhm/frm_fees.shtm **for Fee Amounts and Exemptions.**

D. SIGNATURE

All documents submitted in support of this request are correct to the best of my knowledge. I understand that any false statement may be punishable by fine or imprisonment under Title 18 of the United States Code, Section 1001.

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Mailing Address: 5750 Almaden Expressway San Jose, CA 95118-3614	Daytime Telephone No.: (408) 265-2607 Ext 2927	Fax No.: (408) 978-0156
	E-Mail Address: llee@valleywater.org	
Signature of Requester (required):	Date:	

As the community official responsible for floodplain management, I hereby acknowledge that we have received and reviewed this Letter of Map Revision (LOMR) or conditional LOMR request. Based upon the community's review, we find the completed or proposed project meets or is designed to meet all of the community floodplain management requirements, including the requirement that no fill be placed in the regulatory floodway, and that all necessary Federal, State, and local permits have been, or in the case of a conditional LOMR, will be obtained. In addition, we have determined that the land and any existing or proposed structures to be removed from the SFHA are or will be reasonably safe from flooding as defined in 44CFR 65.2(c), and that we have available upon request by FEMA, all analyses and documentation used to make this determination.

Community Official's Name and Title: Thomas J. Haglund, City Administrator	Community Name: City of Gilroy	
Mailing Address: 7351 Rosanna Street Gilroy, CA 95020-6197	Daytime Telephone No.: 408) 846-0202	Fax No.:
	E-Mail Address: tom.haglund@ci.gilroy.ca.us	
Community Official's Signature (required):	Date:	

CERTIFICATION BY REGISTERED PROFESSIONAL ENGINEER AND/OR LAND SURVEYOR

This certification is to be signed and sealed by a licensed land surveyor, registered professional engineer, or architect authorized by law to certify elevation information data, hydrologic and hydraulic analysis, and any other supporting information as per NFIP regulations paragraph 65.2(b) and as described in the MT-2 Forms Instructions. All documents submitted in support of this request are correct to the best of my knowledge. I understand that any false statement may be punishable by fine or imprisonment under Title 18 of the United States Code, Section 1001.

Certifier's Name: Charles D. Anderson, P.E.	License No.: CA C43776	Expiration Date: 6/30/11
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Ensure the forms that are appropriate to your revision request are included in your submittal.

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☐ Coastal Structures Form (Form 5)	Addition/revision of coastal structure
☐ Alluvial Fan Flooding Form (Form 6)	Flood control measures on alluvial fans

CHARLES D. ANDERSON
No. 43776
EXP. 6/30/11
Charles D Anderson

Seal (Optional)

U.S. DEPARTMENT OF HOMELAND SECURITY - FEDERAL EMERGENCY MANAGEMENT AGENCY

RIVERINE HYDROLOGY & HYDRAULICS FORM

O.M.B No. 1660-0016
Expires: 12/31/2010

PAPERWORK REDUCTION ACT

Public reporting burden for this form is estimated to average 3.25 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing, reviewing, and submitting the form. You are not required to respond to this collection of information unless a valid OMB control number appears in the upper right corner of this form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, U.S. Department of Homeland Security, Federal Emergency Management Agency, 500 C Street, SW, Washington DC 20472, Paperwork Reduction Project (1660-0016). Submission of the form is required to obtain or retain benefits under the National Flood Insurance Program. **Please do not send your completed survey to the above address.**

Flooding Source: Uvas Creek
Note: Fill out one form for each flooding source studied

A. HYDROLOGY

1. Reason for New Hydrologic Analysis (check all that apply)

☒ Not revised (skip to section B)
☐ Alternative methodology
☐ No existing analysis
☐ Proposed Conditions (CLOMR)
☐ Improved data
☐ Changed physical condition of watershed

2. Comparison of Representative 1%-Annual-Chance Discharges

Location	Drainage Area (Sq. Mi.)	Effective/FIS (cfs)	Revised (cfs)

3. Methodology for New Hydrologic Analysis (check all that apply)

☐ Statistical Analysis of Gage Records
☐ Regional Regression Equations
☐ Precipitation/Runoff Model
☐ Other (please attach description)

Please enclose all relevant models in digital format, maps, computations (including computation of parameters) and documentation to support the new analysis.

4. Review/Approval of Analysis

If your community requires a regional, state, or federal agency to review the hydrologic analysis, please attach evidence of approval/review.

5. Impacts of Sediment Transport on Hydrology

Was sediment transport considered? ☐ Yes ☐ No If yes, then fill out Section F (Sediment Transport) of Form 3. If No, then attach your explanation for why sediment transport was not considered.

B. HYDRAULICS

1. Reach to be Revised

	Description	Cross Section	Water-Surface Elevations (ft.) Effective	Water-Surface Elevations (ft.) Proposed/Revised
Downstream Limit	U.S. Highway 101	10041	189.0 feet NAVD	feet NAVD
Upstream Limit	Santa Teresa Boulevard	32282	217.0 feet NAVD	feet NAVD

2. Hydraulic Method/Model Used

HEC-RAS

B. HYDRAULICS (CONTINUED)

3. Pre-Submittal Review of Hydraulic Models

DHS-FEMA has developed two review programs, CHECK-2 and CHECK-RAS, to aid in the review of HEC-2 and HEC-RAS hydraulic models, respectively. These review programs may help verify that the hydraulic estimates and assumptions in the model data are in accordance with NFIP requirements, and that the data are comparable with the assumptions and limitations of HEC-2/HEC-RAS. CHECK-2 and CHECK-RAS identify areas of potential error or concern. **These tools do not replace engineering judgment.** CHECK-2 and CHECK-RAS can be downloaded from http://www.fema.gov/plan/prevent/fhm/frm_soft.shtm. We recommend that you review your HEC-2 and HEC-RAS models with CHECK-2 and CHECK-RAS. Review of your submittal and resolution of valid modeling discrepancies may result in reduced review time.

4. Models Submitted

Models Submitted	Natural Run		Floodway Run		Datum
Duplicate Effective Model*	File Name: N/A	Plan Name:	File Name: N/A	Plan Name:	____
Corrected Effective Model*	File Name: N/A	Plan Name:	File Name: N/A	Plan Name:	____
Existing or Pre-Project Conditions Model	File Name: Uvas	Plan Name: FEMA	File Name: N/A	Plan Name:	NAVD
Revised or Post-Project Conditions Model	File Name: N/A	Plan Name:	File Name: N/A	Plan Name:	____
Other - (attach description)	File Name:	Plan Name:	File Name: N/A	Plan Name:	____

* For details, refer to the corresponding section of the instructions.

☒ Digital Models Submitted? (Required)

C. MAPPING REQUIREMENTS

A **certified topographic map** must be submitted showing the following information (where applicable): the boundaries of the effective, existing, and proposed conditions 1%-annual-chance floodplain (for approximate Zone A revisions) or the boundaries of the 1%- and 0.2%-annual-chance floodplains and regulatory floodway (for detailed Zone AE, AO, and AH revisions); location and alignment of all cross sections with stationing control indicated; stream, road, and other alignments (e.g., dams, levees, etc.); current community easements and boundaries; boundaries of the requester's property; certification of a registered professional engineer registered in the subject State; location and description of reference marks; and the referenced vertical datum (NGVD, NAVD, etc.).

☐ Digital Mapping (GIS/CADD) Data Submitted

Note that the boundaries of the existing or proposed conditions floodplains and regulatory floodway to be shown on the revised FIRM and/or FBFM must tie-in with the effective floodplain and regulatory floodway boundaries. Please attach **a copy of the effective FIRM and/or FBFM,** annotated to show the boundaries of the revised 1%- and 0.2%-annual-chance floodplains and regulatory floodway that tie-in with the boundaries of the effective 1%- and 0.2%-annual-chance floodplain and regulatory floodway at the upstream and downstream limits of the area of revision.

☒ Annotated FIRM and/or FBFM (Required)

D. COMMON REGULATORY REQUIREMENTS*

1. For LOMR/CLOMR requests, do Base Flood Elevations (BFEs) increase? ☐ Yes ☒ No

   a. For CLOMR requests, if either of the following is true, please submit **evidence of compliance with Section 65.12 of the NFIP regulations**:
      - The proposed project encroaches upon a regulatory floodway and would result in increases above 0.00 foot.
      - The proposed project encroaches upon a SFHA with or without BFEs established and would result in increases above 1.00 foot.

   b. For LOMR requests, does this request require property owner notification and acceptance of BFE increases? ☐ Yes ☒ No

      If Yes, please attach **proof of property owner notification and acceptance (if available)**. Elements of and examples of property owner notification can be found in the MT-2 Form 2 Instructions.

2. Does the request involve the placement or proposed placement of fill? ☐ Yes ☒ No

   If Yes, the community must be able to certify that the area to be removed from the special flood hazard area, to include any structures or proposed structures, meets all of the standards of the local floodplain ordinances, and is reasonably safe from flooding in accordance with the NFIP regulations set forth at 44 CFR 60.3(a)(3), 65.5(a)(4), and 65.6(a)(14). Please see the MT-2 instructions for more information.

3. For LOMR requests, is the regulatory floodway being revised? ☐ Yes ☒ No

   If Yes, attach **evidence of regulatory floodway revision notification**. As per Paragraph 65.7(b)(1) of the NFIP Regulations, notification is required for requests involving revisions to the regulatory floodway. (Not required for revisions to approximate 1%-annual-chance floodplains [studied Zone A designation] unless a regulatory floodway is being added. Elements and examples of regulatory floodway revision notification can be found in the MT-2 Form 2 Instructions.)

4. For LOMR/CLOMR requests, does this request have the potential to impact an endangered species? ☐ Yes ☒ No

   If Yes, please submit documentation to the community to show that you have complied with Sections 9 and 10 of the Endangered Species Act (ESA). Section 9 of the ESA prohibits anyone from "taking" or harming an endangered species. If an action might harm an endangered species, a permit is required from U.S. Fish and Wildlife Service or National Marine Fisheries Service under Section 10 of the ESA.

   For actions authorized, funded, or being carried out by Federal or State agencies, please submit documentation from the agency showing its compliance with Section 7(a)(2) of the ESA.

* Not inclusive of all applicable regulatory requirements. For details, see 44 CFR parts 60 and 65.

U.S. DEPARTMENT OF HOMELAND SECURITY - FEDERAL EMERGENCY MANAGEMENT AGENCY

RIVERINE STRUCTURES FORM

O.M.B No. 1660-0016
Expires: 12/31/2010

PAPERWORK REDUCTION ACT

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Flooding Source: Uvas Creek
Note: Fill out one form for each flooding source studied

A. GENERAL

Complete the appropriate section(s) for each Structure listed below:

Channelization .... complete Section B
Bridge/Culvert .... complete Section C
Dam/Basin .... complete Section D
Levee/Floodwall .... complete Section E
Sediment Transport........ complete Section F (if required)

Description Of Structure

1. **Name of Structure: Thomas Road (aka Luchessa Avenue) Bridge**

Type (check one): ☐ Channelization ☒ Bridge/Culvert ☐ Levee/Floodwall ☐ Dam/Basin

Location of Structure: 17,250 feet upstream of Southern Pacific Railroad

Downstream Limit/Cross Section: 21775

Upstream Limit/Cross Section: 21811

2. **Name of Structure: Provisionnaly Accredited Levee P0**

Type (check one): ☐ Channelization ☐ Bridge/Culvert ☒ Levee/Floodwall ☐ Dam/Basin

Location of Structure: North Bank of Uvas Creek

Downstream Limit/Cross Section: 19697

Upstream Limit/Cross Section: 21775

3. **Name of Structure:**

Type (check one) ☐ Channelization ☐ Bridge/Culvert ☐ Levee/Floodwall ☐ Dam/Basin

Location of Structure:

Downstream Limit/Cross Section:

Upstream Limit/Cross Section:

NOTE: For more structures, attach additional pages as needed.

B. CHANNELIZATION

Flooding Source:

Name of Structure:

1. Accessory Structures

The channelization includes (check one):

☐ Levees [Attach Section E (Levee/Floodwall)]
☐ Superelevated sections
☐ Debris basin/detention basin [Attach Section D (Dam/Basin)]
☐ Other (Describe):

☐ Drop structures
☐ Transitions in cross sectional geometry
☐ Energy dissipator

2. Drawing Checklist

Attach the plans of the channelization certified by a registered professional engineer, as described in the instructions.

3. Hydraulic Considerations

The channel was designed to carry (cfs) and/or the -year flood.

The design elevation in the channel is based on (check one):

☐ Subcritical flow ☐ Critical flow ☐ Supercritical flow ☐ Energy grade line

If there is the potential for a hydraulic jump at the following locations, check all that apply and attach an explanation of how the hydraulic jump is controlled without affecting the stability of the channel.

☐ Inlet to channel ☐ Outlet of channel ☐ At Drop Structures ☐ At Transitions
☐ Other locations (specify):

4. Sediment Transport Considerations

Was sediment transport considered? ☐ Yes ☐ No If Yes, then fill out Section F (Sediment Transport).
If No, then attach your explanation for why sediment transport was not considered.

C. BRIDGE/CULVERT

Flooding Source: Uvas Creek

Name of Structure: Thomas Road (aka Luchessa Avenue) Bridge

1. This revision reflects (check one):

☐ Bridge/culvert not modeled in the FIS
☐ Modified bridge/culvert previously modeled in the FIS
☒ Revised analysis of bridge/culvert previously modeled in the FIS

2. Hydraulic model used to analyze the structure (e.g., HEC-2 with special bridge routine, WSPRO, HY8): HEC-RAS
If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structures. Attach justification.

3. Attach plans of the structures certified by a registered professional engineer. The plan detail and information should include the following (check the information that has been provided):

☒ Dimensions (height, width, span, radius, length)
☐ Shape (culverts only)
☒ Material
☒ Beveling or Rounding
☒ Wing Wall Angle
☒ Skew Angle
☒ Distances Between Cross Sections

☒ Erosion Protection
☒ Low Chord Elevations – Upstream and Downstream
☒ Top of Road Elevations – Upstream and Downstream
☒ Structure Invert Elevations – Upstream and Downstream
☒ Stream Invert Elevations – Upstream and Downstream
☒ Cross-Section Locations

4. Sediment Transport Considerations

Was sediment transport considered? ☐ Yes ☒ No If yes, then fill out Section F (Sediment Transport).
If No, then attach your explanation for why sediment transport was not considered.

D. DAM/BASIN

Flooding Source:

Name of Structure:

1. This request is for (check one): ☐ Existing dam ☐ New dam ☐ Modification of existing dam

2. The dam was designed by (check one): ☐ Federal agency ☐ State agency ☐ Local government agency ☐ Private organization

   Name of the agency or organization:

3. The Dam was permitted as (check one):

   a. ☐ Federal Dam ☐ State Dam

   Provide the permit or identification number (ID) for the dam and the appropriate permitting agency or organization

   Permit or ID number   Permitting Agency or Organization

   b. ☐ Local Government Dam ☐ Private Dam

   Provided related drawings, specification and supporting design information.

4. Does the project involve revised hydrology? ☐ Yes ☐ No

   If Yes, complete the Riverine Hydrology & Hydraulics Form (Form 2).

   Was the dam/basin designed using critical duration storm?

   ☐ Yes, provide supporting documentation with your completed Form 2.

   ☐ No, provide a written explanation and justification for not using the critical duration storm.

5. Does the submittal include debris/sediment yield analysis? ☐ Yes ☐ No

   If yes, then fill out Section F (Sediment Transport).
   If No, then attach your explanation for why debris/sediment analysis was not considered.

6. Does the Base Flood Elevation behind the dam or downstream of the dam change?

   ☐ Yes ☐ No If Yes, complete the Riverine Hydrology & Hydraulics Form (Form 2) and complete the table below.

Stillwater Elevation Behind the Dam

FREQUENCY (% annual chance)	FIS	REVISED
10-year (10%)		
50-year (2%)		
100-year (1%)		
500-year (0.2%)		
Normal Pool Elevation		

7. Please attach a copy of the formal Operation and Maintenance Plan

E. LEVEE/FLOODWALL

1. System Elements

a. This Levee/Floodwall analysis is based on (check one):

☐ upgrading of an existing levee/floodwall system
☐ a newly constructed levee/floodwall system
☒ reanalysis of an existing levee/floodwall system

b. Levee elements and locations are (check one):

☒ earthen embankment, dike, berm, etc.	Station 19697 to 21775
☐ structural floodwall	Station to
☐ Other (describe):	Station to

c. Structural Type (check one):

☐ monolithic cast-in place reinforced concrete
☐ reinforced concrete masonry block
☐ sheet piling
☐ Other (describe):

d. Has this levee/floodwall system been certified by a Federal agency to provide protection from the base flood?

☒ Yes ☐ No

If Yes, by which agency? US Army Corps of Engineers

e. Attach certified drawings containing the following information (indicate drawing sheet numbers):

1. Plan of the levee embankment and floodwall structures.	Sheet Numbers: 2-7 of Levee Plans
2. A profile of the levee/floodwall system showing the Base Flood Elevation (BFE), levee and/or wall crest and foundation, and closure locations for the total levee system.	Sheet Numbers: See Tab 6
3. A profile of the BFE, closure opening outlet and inlet invert elevations, type and size of opening, and kind of closure.	Sheet Numbers: n/a
4. A layout detail for the embankment protection measures.	Sheet Numbers: 22, 28 of Thomas Rd Plans
5. Location, layout, and size and shape of the levee embankment features, foundation treatment, floodwall structure, closure structures, and pump stations.	Sheet Numbers: 8 of Levee Plans

2. Freeboard

a. The minimum freeboard provided above the BFE is:

Riverine

3.0 feet or more at the downstream end and throughout	☒ Yes	☐ No
3.5 feet or more at the upstream end	☒ Yes	☐ No
4.0 feet within 100 feet upstream of all structures and/or constrictions	☒ Yes	☐ No

Coastal

1.0 foot above the height of the one percent wave associated with the 1%-annual-chance stillwater surge elevation or maximum wave runup (whichever is greater).	☐ Yes	☐ No
2.0 feet above the 1%-annual-chance stillwater surge elevation	☐ Yes	☐ No

2. Freeboard (continued)

Please note, occasionally exceptions are made to the minimum freeboard requirement. If an exception is requested, attach documentation addressing Paragraph 65.10(b)(1)(ii) of the NFIP Regulations.

If No is answered to any of the above, please attach an explanation.

b. Is there an indication from historical records that ice-jamming can affect the BFE? ☐ Yes ☒ No

If Yes, provide ice-jam analysis profile and evidence that the minimum freeboard discussed above still exists.

3. Closures

a. Openings through the levee system (check one): ☐ exists ☒ does not exist

If opening exists, list all closures:

Channel Station	Left or Right Bank	Opening Type	Highest Elevation for Opening Invert	Type of Closure Device

(Extend table on an added sheet as needed and reference)

Note: Geotechnical and geologic data

In addition to the required detailed analysis reports, data obtained during field and laboratory investigations and used in the design analysis for the following system features should be submitted in a tabulated summary form. (Reference U.S. Army Corps of Engineers [USACE] EM-1110-2-1906 Form 2086.)

4. Embankment Protection

a. The maximum levee slope landside is: 2:1

b. The maximum levee slope floodside is: 2:1

c. The range of velocities along the levee during the base flood is: 1.1 (min.) to 10.5 (max.) (see Velocity Table in Tab 7)

d. Embankment material is protected by (describe what kind): Vegetation and Selective Rock Revetment

e. Riprap Design Parameters (check one): ☒ Velocity ☐ Tractive stress
Attach references

Reach	Sideslope	Flow Depth	Velocity	Curve or Straight	Stone Riprap			Depth of Toedown
					D_{100}	D_{50}	Thickness	
Sta 22020 to 21468	3:1	24.16'	2.7 ft/s	Curve		1/4 T	21"	0 - 7'
Sta to								
Sta to								
Sta to								
Sta to								
Sta to								

(Extend table on an added sheet as needed and reference each entry)

E. LEVEE/FLOODWALL (CONTINUED)

4. Embankment Protection (continued)

f. Is a bedding/filter analysis and design attached? ☐ Yes ☒ No

g. Describe the analysis used for other kinds of protection used (include copies of the design analysis):

See Chapter 8 of enclosed Geotechnical Investigation by AMEC Geomatrix, Inc.

Attach engineering analysis to support construction plans.

5. Embankment And Foundation Stability

a. Identify locations and describe the basis for selection of critical location for analysis:
See Chapter 7 of enclosed Geotechnical Investigation by AMEC Geomatrix, Inc.

☐ Overall height: Sta. ; height ft.

☐ Limiting foundation soil strength:

Sta. , depth to

strength ϕ = degrees, c = psf

slope: SS = (h) to (v)

(Repeat as needed on an added sheet for additional locations)

b. Specify the embankment stability analysis methodology used (e.g., circular arc, sliding block, infinite slope, etc.):

Two-dimensional force and moment limit-equilibrium method (SLOPE/W)

c. Summary of stability analysis results:

Case	Loading Conditions	Critical Safety Factor	Criteria (Min.)
I	End of construction	1.99	1.3
II	Sudden drawdown	1.30	1.0
III	Critical flood stage	3.23	1.4
IV	Steady seepage at flood stage	3.23	1.4
VI	Earthquake (Case I)	1.13	1.0

(Reference: USACE EM-1110-2-1913 Table 6-1)

d. Was a seepage analysis for the embankment performed? ☒ Yes ☐ No

If Yes, describe methodology used: Two-dimensional finite element (SEEP/W)

e. Was a seepage analysis for the foundation performed? ☒ Yes ☐ No

f. Were uplift pressures at the embankment landside toe checked? ☒ Yes ☐ No

g. Were seepage exit gradients checked for piping potential? ☒ Yes ☐ No

h. The duration of the base flood hydrograph against the embankment is 7 hours.

Attach engineering analysis to support construction plans.

6. Floodwall And Foundation Stability

a. Describe analysis submittal based on Code (check one):

☐ UBC (1988) or ☐ Other (specify):

b. Stability analysis submitted provides for:

☐ Overturning ☐ Sliding If not, explain:

c. Loading included in the analyses were:

☐ Lateral earth @ P_A = psf; P_p = psf

☐ Surcharge-Slope @ , ☐ surface psf

☐ Wind @ P_w = psf

☐ Seepage (Uplift); ☐ Earthquake @ P_{eq} = %g

☐ 1%-annual-chance significant wave height: ft.

☐ 1%-annual-chance significant wave period: sec.

d. Summary of Stability Analysis Results: Factors of Safety.

Itemize for each range in site layout dimension and loading condition limitation for each respective reach.

Loading Condition	Criteria (Min)		Sta	To	Sta	To
	Overturn	Sliding	Overturn	Sliding	Overturn	Sliding
Dead & Wind	1.5	1.5				
Dead & Soil	1.5	1.5				
Dead, Soil, Flood, & Impact	1.5	1.5				
Dead, Soil, & Seismic	1.3	1.3				

(Ref: FEMA 114 Sept 1986; USACE EM 1110-2-2502)

(Note: Extend table on an added sheet as needed and reference)

e. Foundation bearing strength for each soil type:

Bearing Pressure	Sustained Load (psf)	Short Term Load (psf)
Computed design maximum		
Maximum allowable		

f. Foundation scour protection ☐ is, ☐ is not provided. If provided, attach explanation and supporting documentation:

Attach engineering analysis to support construction plans.

E. LEVEE/FLOODWALL (CONTINUED)

7. Settlement

a. Has anticipated potential settlement been determined and incorporated into the specified construction elevations to maintain the established freeboard margin? ☒ Yes ☐ No

b. The computed range of settlement is 0.08 ft. to 0.25 ft.

c. Settlement of the levee crest is determined to be primarily from :

☐ Foundation consolidation
☐ Embankment compression
☒ Other (Describe):

d. Differential settlement of floodwalls ☐ has ☐ has not been accommodated in the structural design and construction.

Attach engineering analysis to support construction plans.

8. Interior Drainage

a. Specify size of each interior watershed:

Draining to pressure conduit: 0 acres
Draining to ponding area: 0 acres

b. Relationships Established

Ponding elevation vs. storage ☐ Yes ☐ No
Ponding elevation vs. gravity flow ☐ Yes ☐ No
Differential head vs. gravity flow ☐ Yes ☐ No

c. The river flow duration curve is enclosed: ☐ Yes ☐ No

d. Specify the discharge capacity of the head pressure conduit: cfs

e. Which flooding conditions were analyzed?

- Gravity flow (Interior Watershed) ☐ Yes ☐ No
- Common storm (River Watershed) ☐ Yes ☐ No
- Historical ponding probability ☐ Yes ☐ No
- Coastal wave overtopping ☐ Yes ☐ No

If No for any of the above, attach explanation.

f. Interior drainage has been analyzed based on joint probability of interior and exterior flooding and the capacities of pumping and outlet facilities to provide the established level of flood protection. ☐ Yes ☐ No

If No, attach explanation.

g. The rate of seepage through the levee system for the base flood is 0 cfs

h. The length of levee system used to drive this seepage rate in item g: ft.

E. LEVEE/FLOODWALL (CONTINUED)

8. Interior Drainage (continued)

i. Will pumping plants be used for interior drainage? ☐ Yes ☐ No

If Yes, include the number of pumping plants:
For each pumping plant, list:

	Plant #1	Plant #2
The number of pumps		
The ponding storage capacity		
The maximum pumping rate		
The maximum pumping head		
The pumping starting elevation		
The pumping stopping elevation		
Is the discharge facility protected?		
Is there a flood warning plan?		
How much time is available between warning and flooding?		

Will the operation be automatic? ☐ Yes ☐ No
If the pumps are electric, are there backup power sources? ☐ Yes ☐ No

(Reference: USACE EM-1110-2-3101, 3102, 3103, 3104, and 3105)

Include a copy of supporting documentation of data and analysis. Provide a map showing the flooded area and maximum ponding elevations for all interior watersheds that result in flooding.

9. Other Design Criteria

a. The following items have been addressed as stated:

Liquefaction ☐ is ☒ is not a problem
Hydrocompaction ☐ is ☒ is not a problem
Heave differential movement due to soils of high shrink/swell ☐ is ☒ is not a problem

b. For each of these problems, state the basic facts and corrective action taken:

Attach supporting documentation

c. If the levee/floodwall is new or enlarged, will the structure adversely impact flood levels and/or flow velocities floodside of the structure?
☐ Yes ☐ No

Attach supporting documentation

d. Sediment Transport Considerations:

Was sediment transport considered? ☐ Yes ☒ No If Yes, then fill out Section F (Sediment Transport).
If No, then attach your explanation for why sediment transport was not considered.

E. LEVEE/FLOODWALL (CONTINUED)

10. Operational Plan And Criteria

a. Are the planned/installed works in full compliance with Part 65.10 of the NFIP Regulations? ☒ Yes ☐ No

b. Does the operation plan incorporate all the provisions for closure devices as required in Paragraph 65.10(c)(1) of the NFIP regulations?
☒ Yes ☐ No

c. Does the operation plan incorporate all the provisions for interior drainage as required in Paragraph 65.10(c)(2) of the NFIP regulations?
☒ Yes ☐ No

If the answer is No to any of the above, please attach supporting documentation.

11. Maintenance Plan

a. Are the planned/installed works in full compliance with Part 65.10 of the NFIP Regulations? ☒ Yes ☐ No
If No, please attach supporting documentation.

12. Operations and Maintenance Plan

Please attach a copy of the formal Operations and Maintenance Plan for the levee/floodwall.

F. SEDIMENT TRANSPORT

Flooding Source:

Name of Structure:

If there is any indication from historical records that sediment transport (including scour and deposition) can affect the Base Flood Elevation (BFE); and/or based on the stream morphology, vegetative cover, development of the watershed and bank conditions, there is a potential for debris and sediment transport (including scour and deposition) to affect the BFEs, then provide the following information along with the supporting documentation:

Sediment load associated with the base flood discharge: Volume acre-feet

Debris load associated with the base flood discharge: Volume acre-feet

Sediment transport rate (percent concentration by volume)

Method used to estimate sediment transport:

Most sediment transport formulas are intended for a range of hydraulic conditions and sediment sizes; attach a detailed explanation for using the selected method.

Method used to estimate scour and/or deposition:

Method used to revise hydraulic or hydrologic analysis (model) to account for sediment transport:
Please note that bulked flows are used to evaluate the performance of a structure during the base flood; however, FEMA does not map BFEs based on bulked flows.

If a sediment analysis has not been performed, an explanation as to why sediment transport (including scour and deposition) will not affect the BFEs or structures must be provided.

TAB 2

NOTES TO USERS

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Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

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NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

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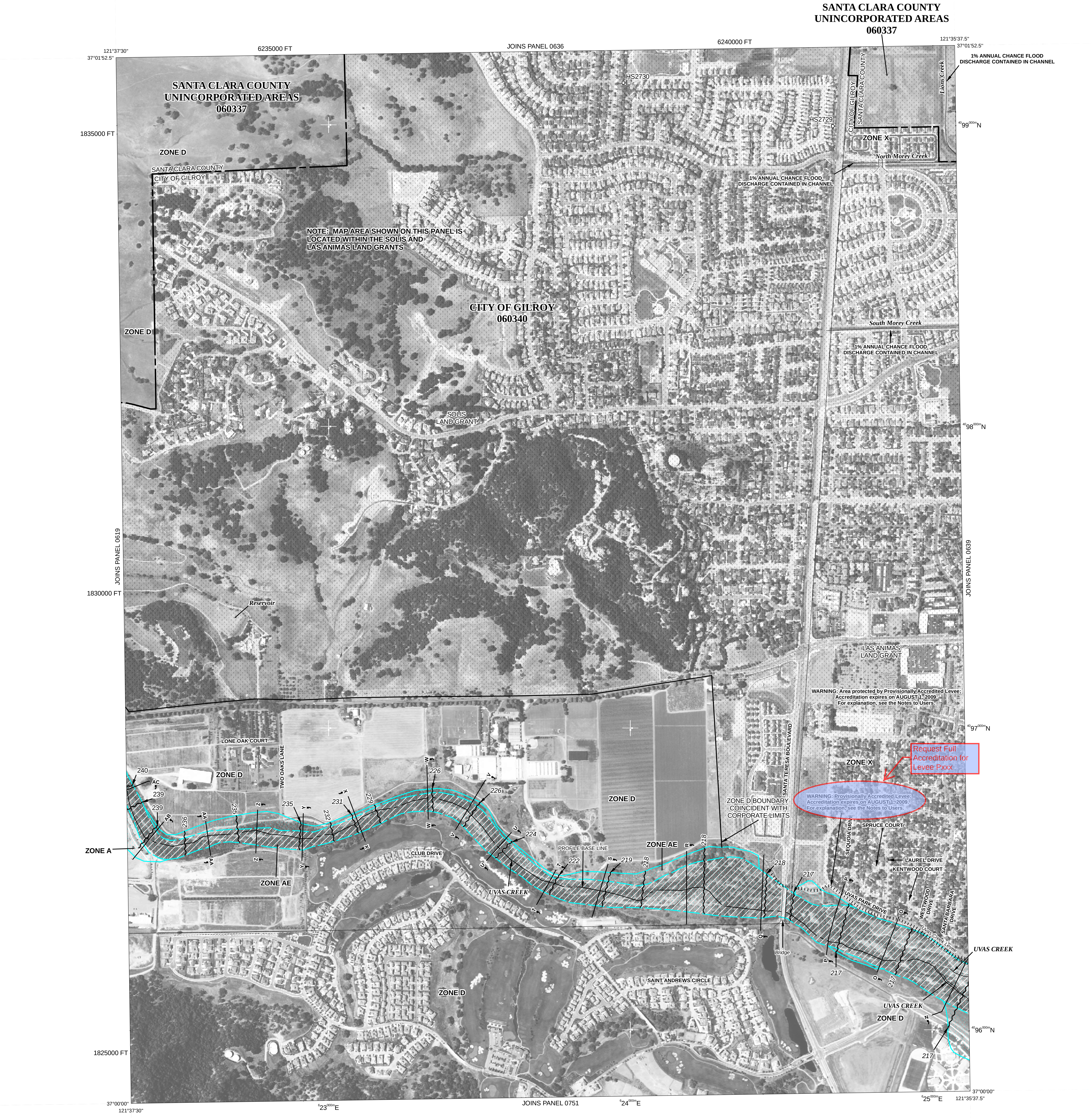
WARNING: This levee, dike, or other structure has been provisionally accredited and mapped as providing protection from the 1-percent annual chance flood. To maintain accreditation, the levee owner or community is required to submit documentation necessary to comply with 44 CFR Section 65.10 by (8/01/2009). Because of the risk of overtopping or failure of the structure, communities should take proper precautions to protect lives and minimize damages in these areas, such as issuing an evacuation plan and encouraging property owners to purchase flood insurance.



LEGEND

▨ SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

▨ FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

☐ OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

☐ OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

▨ COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

▨ OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

———	1% annual chance floodplain boundary
———	0.2% annual chance floodplain boundary
— — —	Floodway boundary
— — —	Zone D boundary
┆┆┆┆┆┆	CBRS and OPA boundary
▭	Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
〰 513 〰	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

A——A	Cross section line
23- - - -23	Transect line
87°07'45", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
$^{24}76^{000m}$N	1000-meter Universal Transverse Mercator grid values, zone 10N
600000 FT	5000-foot grid ticks: California State Plane coordinate system, zone III (FIPSZONE 0403), Lambert Conformal Conic projection
DX5510 [	Bench mark (see explanation in Notes to Users section of this FIRM panel)
● M1.5	River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 500 1000 FEET

METERS 150 0 150 300

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0638H

FIRM

FLOOD INSURANCE RATE MAP

SANTA CLARA COUNTY, CALIFORNIA
AND INCORPORATED AREAS

PANEL 638 OF 830

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
GILROY, CITY OF	060340	0638	H
SANTA CLARA COUNTY	060337	0638	H

REVISED PRELIMINARY
NOVEMBER 30, 2007

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
06085C0638H

EFFECTIVE DATE

Federal Emergency Management Agency

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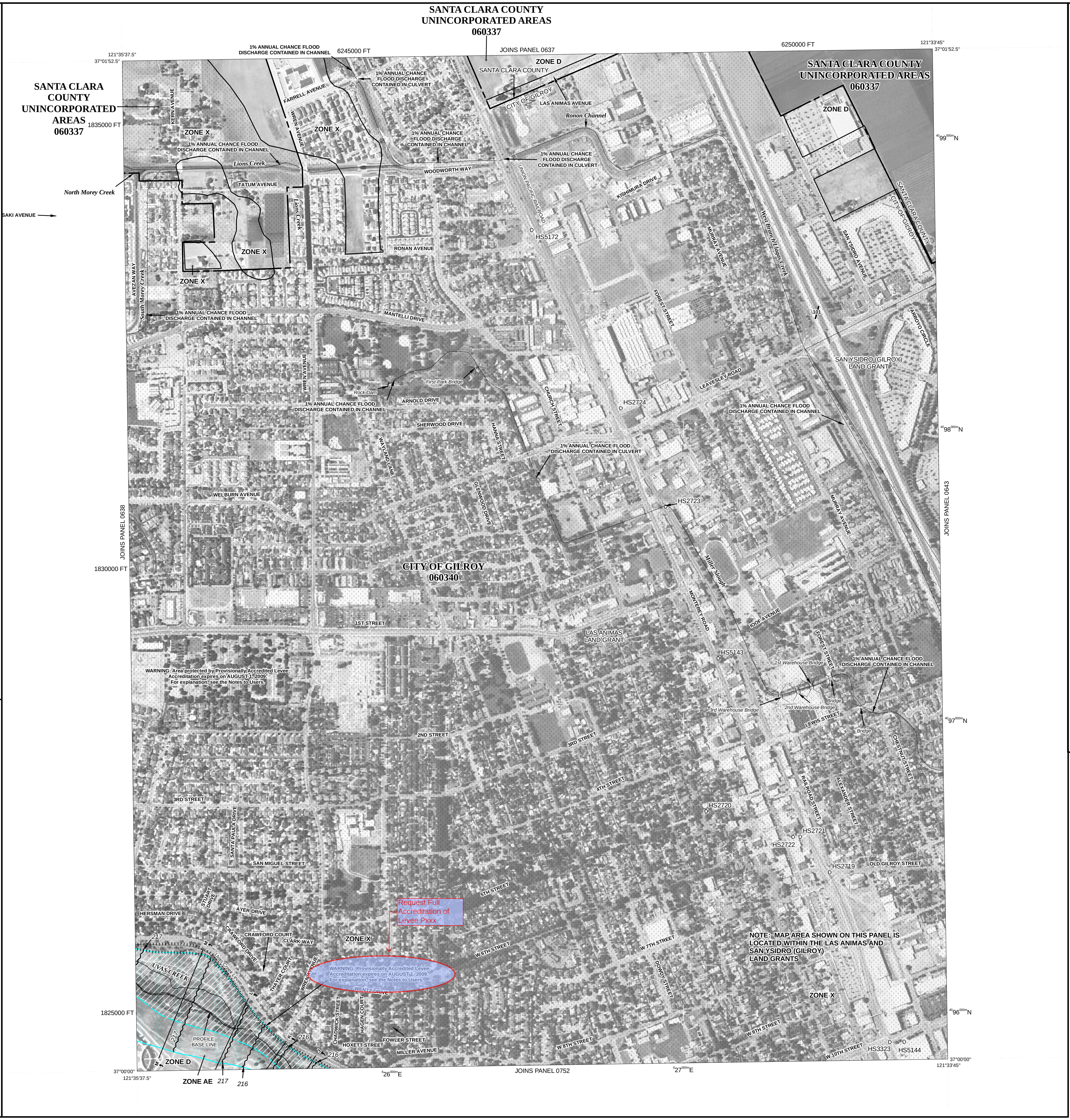

LEGEND

▨ SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

▨ FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

▨ OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

☐ OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

▨ COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

▨ OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

———	1% annual chance floodplain boundary
———	0.2% annual chance floodplain boundary
— — —	Floodway boundary
— — —	Zone D boundary
· · · · · ·	CBRS and OPA boundary
▨	Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
~~ 513 ~~~	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

A—————A	Cross section line
23- - - - - -23	Transect line
87°07'45", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
$^{24}76^{000m}$N	1000-meter Universal Transverse Mercator grid values, zone 10N
600000 FT	5000-foot grid ticks: California State Plane coordinate system, zone III (FIPSZONE 0403), Lambert Conformal Conic projection
DX5510 [	Bench mark (see explanation in Notes to Users section of this FIRM panel)
● M1.5	River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

N

MAP SCALE 1" = 500'

250 0 500 1000 FEET

150 0 150 300 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0639H

FIRM

FLOOD INSURANCE RATE MAP

SANTA CLARA COUNTY, CALIFORNIA
AND INCORPORATED AREAS

PANEL 639 OF 830

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
GILROY, CITY OF	060340	0639	H
SANTA CLARA COUNTY	060337	0639	H

REVISED PRELIMINARY
NOVEMBER 30, 2007

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
06085C0639H

EFFECTIVE DATE

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations tables in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations tables should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 10. The **horizontal datum** was NAD 83, GRS80 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit its website at http://www.ngs.noaa.gov.

Base map information shown on this FIRM was derived from U.S. Geological Survey Digital Orthophoto Quadrangles produced at a scale of 1:12,000 from photography dated 1992. Additional information was derived from AirPhoto USA Orthophotography produced at a scale of 1:12,000 from photography dated 2002.

This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at http://msc.fema.gov.

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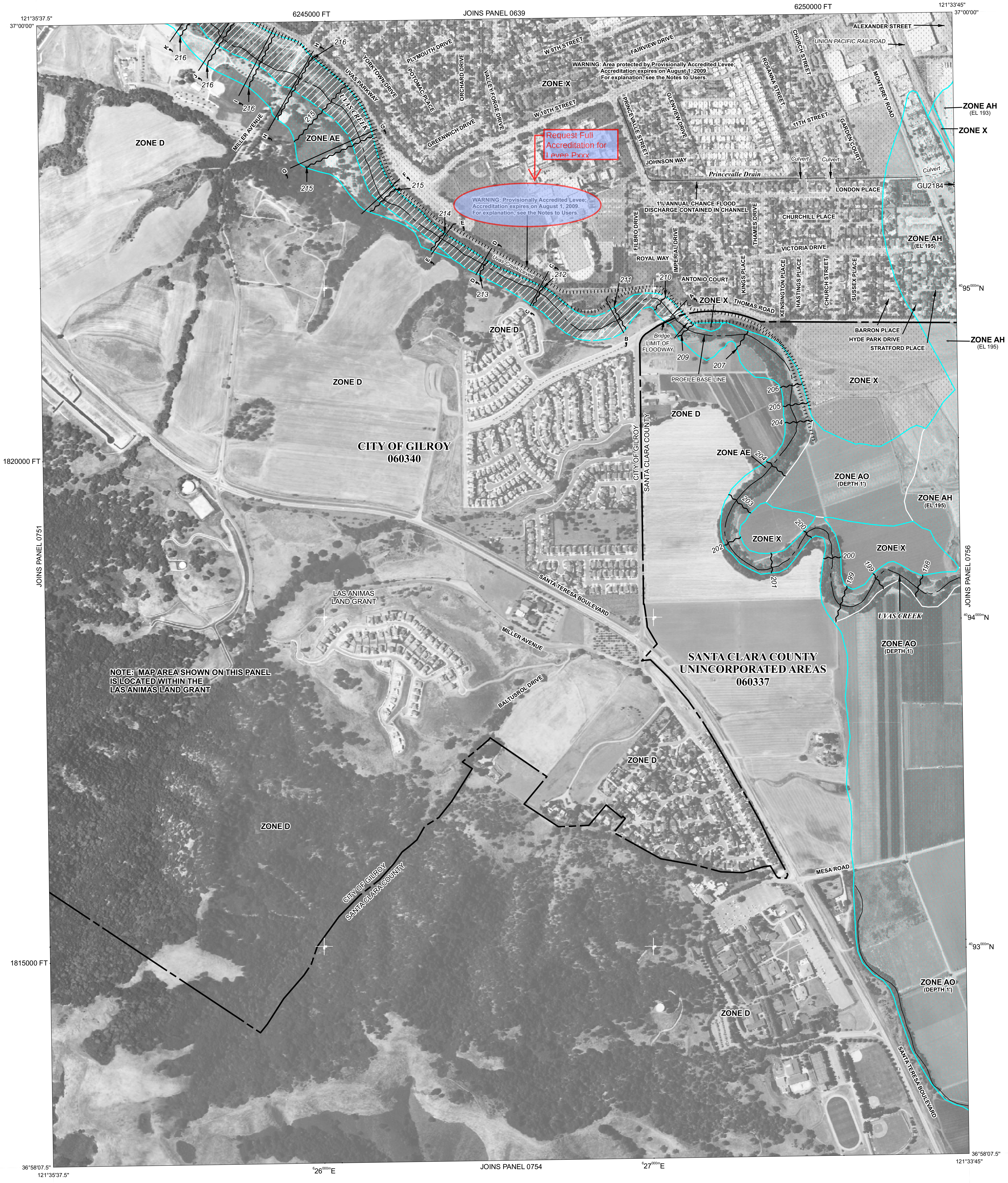

LEGEND

▨	SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
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The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

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☐	OTHER AREAS
ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
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▨	OTHERWISE PROTECTED AREAS (OPAs)

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———	1% annual chance floodplain boundary
———	0.2% annual chance floodplain boundary
— — —	Floodway boundary
— — —	Zone D boundary
⁞⁞⁞⁞⁞⁞	CBRS and OPA boundary
▨	Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
~~ 513 ~~~	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

W——W	Cross section line
S- - - -S	Transect line
87°07'45", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
$^{24}76^{000m}$N	1000-meter Universal Transverse Mercator grid values, zone 10N
600000 FT	5000-foot grid ticks: California State Plane coordinate system, zone III (FIPSZONE 0403), Lambert Conformal Conic projection
DX5510 [	Bench mark (see explanation in Notes to Users section of this FIRM panel)
● M1.5	River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

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MAP SCALE 1" = 500'

250 0 500 1000 FEET

150 0 150 300 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0752H

FIRM

FLOOD INSURANCE RATE MAP

SANTA CLARA COUNTY, CALIFORNIA
AND INCORPORATED AREAS

PANEL 752 OF 830

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
GILROY, CITY OF	060340	0752	H
SANTA CLARA COUNTY	060337	0752	H

REVISED PRELIMINARY
NOVEMBER 30, 2007

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
06085C0752H

EFFECTIVE DATE

Federal Emergency Management Agency

TAB 3

RJA
RUGGERI-JENSEN-AZAR
ENGINEERS • PLANNERS • SURVEYORS

May 26, 2009

Mr. Charles D. Anderson, PE
Schaaf & Wheeler Consulting Civil Engineers
100 N. Winchester Blvd., Suite 200
Santa Clara, CA 95050

RE: Levee Recertification for Uvas Creek, Gilroy, CA

Dear Mr. Anderson:

As a Licensed Land Surveyor in the State of California, please consider this letter my certification that the field surveys for Uvas Creek were performed under my direct supervision and that all surveys were performed in accordance with standard practices.

Control for these surveys was established on the California NAD 83 State Plane Coordinate System, Zone 3, 2002 epoch and elevations are based upon NAVD 1998.

Please feel free to call me with any questions.

Sincerely,
Ruggeri-Jensen-Azar & Associates

By: Andrew S. Chafer, PLS 8005
Senior Surveyor

ANDREW S. CHAFER
No. 8005
Exp. 12/31/10

Santa Clara County Contours

Data format: LAS, ASCII, ESRI geodatabase, Microstation V8, AutoCAD 2004

Coordinate system: State Plane Coordinate System

Theme keywords: LiDAR, DEM, DTM, ESRI personal geodatabase, DGN (V8), AutoCAD 2004

FGDC and ESRI Metadata:

- Identification Information
- Data Quality Information
- Spatial Data Organization Information
- Spatial Reference Information
- Distribution Information
- Metadata Reference Information

Metadata elements shown with blue text are defined in the Federal Geographic Data Committee's (FGDC) *Content Standard for Digital Geospatial Metadata (CSDGM)*. Elements shown with green text are defined in the *ESRI Profile of the CSDGM.* Elements shown with a green asterisk (*) will be automatically updated by ArcCatalog. ArcCatalog adds hints indicating which FGDC elements are mandatory; these are shown with gray text.

Identification Information:

Citation:

Citation information:

Originators: Optimal Geomatics, Inc

Title:

Santa Clara County Contours

Edition: 1.0

Geospatial data presentation form: LiDAR ASCII, ESRI personal geodatabase, DGN (V8) and AutoCAD (2004)

Publication information:

Publication place: Santa Clara County, California

Publisher: Santa Clara County, California

Description:

Abstract:

LAS format files, raw LiDAR data in its native format, classified bare-earth LiDAR DEM and photogrammetrically derived breaklines generated from LiDAR Intensity stereo-pairs. Breakline, Top of Bank, and contour files in ESRI personal geodatabase format, Microstation V8 .dgn format, and AutoCAD 2004 formats for the San Jose Phase 3 project of Santa Clara County, Ca.

Purpose:

The purpose of the bare-earth LiDAR Point and Breakline data is to provide ground surface data and one-foot (Valley Area) and five-foot (Mountain Areas) contour generation, and the delineation of watercourse (Top of Bank).

Supplemental information:
Breaklines were derived through photogrammetric techniques utilizing LiDAR intensity stereo-pairs.

Language of dataset: English (U.S.)

Time period of content:
Time period information:
Range of dates/times:
Beginning date: 06 April 2006
Ending date: 01 May 2006

Currentness reference:
ground condition

Status:
Progress: In work
Maintenance and update frequency: As needed

Spatial domain:
Bounding coordinates:
West bounding coordinate: 6051705.291546
East bounding coordinate: 6357983.392299
North bounding coordinate: 2011601.113402
South bounding coordinate: 1782807.312840

Keywords:
Theme:
Theme keywords: LiDAR, DEM, DTM, ESRI personal geodatabase, DGN (V8), AutoCAD 2004
Theme keyword thesaurus: None

Place:
Place keywords: United States, Santa Clara County, California, San Jose
Place keyword thesaurus: None

Temporal:

Access constraints: None
Use constraints:
The DTM data represents the results of data collection/processing for Santa Clara, California and indicates the existing general conditions. As such, they are only valid for their intended use, content, time and accuracy specifications. The user is responsible for the results of any application of data other than its intended purposes.

Point of contact:
Contact information:
Contact person primary:
Contact person: Stuart MacRitchie
Contact organization: Triathlon Ltd./MDA Geospatial Services

Contact address:
Address type: mailing address
Address:
13800 Commerce Parkway

City: Richmond
State or province: BC
Postal code: V6V 2J3
Country: Canada

Contact voice telephone: 604-233-5003
Contact facsimile telephone: 604-233-5005

Contact electronic mail address: smacritc@mda.ca

Hours of service: 8:00 am - 5:00 pm PST

Data set credit:

Optimal Geomatics, Inc
2227 Drake Avenue, SW.
Bldg. 14
Huntsville, AL 35805
Contact: Ronny Taylor
Phone: 256-882-7788
Fax: 256-882-7774
Contract No. RV-11328

Security information:

Security classification system: None
Security classification: Unclassified

Native dataset format: LAS, ASCII, ESRI geodatabase, Microstation V8, AutoCAD 2004

Back to Top

Data Quality Information:

Attribute accuracy:

Attribute accuracy report:

LiDAR DEMs to support 1' contours have a maximum RMSE of 9 centimeters, which is roughly equivalent to 0.6' accuracy with a 95% confidence. Field verification of the vertical accuracy of the LiDAR DEM was conducted to ensure that the 9-centimeter RMSE requirement was satisfied for all major vegetation categories that were predominate within the 1' contour area.

Quantitative attribute accuracy assessment:

Attribute accuracy value: NSSDA 95% Confidence: 0.6'
Attribute accuracy explanation:

The RMSE calculated from a sample of test points is not the RMSE of the DEM. The calculated value may be higher or it may be lower than that of the DEM. Confidence in the calculated value increases with the number of test points. If the errors (lack of accuracy) associated with the DEM are normally distributed and unbiased, the confidence in the calculated RMSE can be determined as a function of sample size. Similarly, the sample RMSE necessary to obtain 95-percent confidence that the DEM RMSE is less than 9 centimeters can also be determined as a function of sample size. Optimal Geomatics collected test points using RTK (Real-Time Kinematic) GPS techniques. Over one hundred and twenty points were collected in total over various terrain classes. All RMSE calculations were performed on the bare-earth, orthometric surface.

Logical consistency report:

LiDAR was classified and stereo-pairs were generated from LiDAR intensity data which were used to collect breaklines and top of bank. A surface was generated from the bare earth LiDAR DTM and collected breakline data to produce 1', 5', 10' and 25' contours in pre-assigned areas designated by the client.

Completeness report:

Each strip was imported into a project using TerraScan (Terrasolid, Ltd.) and the project management tool GeoCue (GeoCue Corp.). By creating a project, the various flightlines are combined while breaking the dataset as a whole into manageable pieces. This process also converts the dataset from geographic coordinates to the State Plane Coordinate System (NAD83), California III. The ellipsoid height values were converted to NAVD88 orthometric values using Geoid03, provided by NGS. Individual lines were then checked against adjacent lines to ensure a cohesive dataset. The data from each line were then combined and a classification routine was then run to determine the initial surface model. This initial surface model was then reduced using Optimal Geomatics' proprietary methods to create the final bare-earth dataset. A Triangular Irregular Network (TIN) was generated using the final surface data. Contours were then created from the TIN. The bareearth data were then checked against the validation points across the project area. The results of these checks showed the DEM fitting the validation points well (see LiDAR DEM Quality Control Report for results). Stereo pairs were generated from the LiDAR intensity data using Geocue and LiDAR1CuePac (GeoCue Corp.). LiDARgrammetry was then utilized to collect breaklines where necessary along hydro features to support the contour generation. These breaklines were collected as a 3D element in the MicroStation (Bentley Systems, Inc.) environment utilizing ISSD (Z/I Imaging). The breaklines, top of bank (TOB), contour files were delivered in MicroStation v8, AutoCAD 2004 and ESRI Personal GeoDatabase formats. The LiDAR point data were delivered in LAS and ASCII formats. LiDAR orthos were delivered in TIF/TFW format.

Positional accuracy:

Horizontal positional accuracy:

Horizontal positional accuracy report:

No specific testing was done to determine horizontal accuracy of the DTM. Test results for vertical accuracy tend to show that the 0.75m (2.46 US survey feet) RMSE horizontal accuracy tolerance determined by system studies and other methods was met or exceeded.

Quantitative horizontal positional accuracy assessment:

Horizontal positional accuracy value: 0.75 m (2.46 US survey feet)

Horizontal positional accuracy explanation:

Expected horizontal accuracy of elevation products as determined from system studies
and other methods is 1/2000th of the flight height, which in the instance of this particular
project was 1500m (4921.2 US survey feet) AGL, giving a horizontal tolerance of less
than 0.75m (2.46 US survey feet).

Vertical positional accuracy:

Vertical positional accuracy report:

Tested to meet 0.6 ft vertical accuracy at 95 percent confidence level.

Quantitative vertical positional accuracy assessment:
Vertical positional accuracy value: NSSDA 95% Confidence: 0.21' in open terrain
Vertical positional accuracy explanation:
Tested 0.21' in open terrain at ninety-five percent confidence level using RMSE(z) x 1.9600.

Lineage:
Source information:
Source citation:
Citation information:
Originators: San Jose, California

Title:
San Jose Phase 3, Santa Clara County, California LiDAR Survey

Publication date: 2006
Publication time: Unknown
Edition: 1.0
Geospatial data presentation form: LiDAR ASCII, ESRI personal geodatabase, DGN (V8), and AutoCAD (2004)

Publication information:
Publication place: San Jose, Santa Clara County, California
Publisher: San Jose, Santa Clara County, California

Type of source media: FireWire & DVD (3-sets)
Source contribution:
LiDAR DEM
LiDARGrammetry derived Breaklines & TOB
Contours

Source time period of content:
Time period information:
Range of dates/times:
Beginning date: 06 April 2006
Ending date: 01 May 2006

Source currentness reference:
ground condition

Process step:
Process description:
Each strip was imported into a project using TerraScan (Terrasolid, Ltd.) and the project management tool GeoCue (GeoCue Corp.). By creating a project the various flightlines are combined while breaking the dataset as a whole into manageable pieces. This process also converts the dataset from geographic coordinates to the State Plane Coordinate System (NAD83), California III. The ellipsoid height values were converted to NAVD88 orthometric values using Geoid03, provided by NGS. Individual lines were then checked against adjacent lines to ensure a cohesive dataset. The data from each line were then combined and a classification routine was then run to determine the initial surface model. This initial surface model was then reduced using Optimal Geomatics' proprietary methods to create the final bare-earth dataset. A Triangular Irregular Network (TIN) was generated using the final surface data. Contours were then created from

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Process date: Not complete

Source used citation abbreviation:
N/A
Source produced citation abbreviation:
N/A

Process contact:
Contact information:
Contact organization primary:
Contact person: Stuart MacRitchie
Contact organization: Triathlon, Ltd. / MDA Geospatial Services

Contact address:
Address type: mailing and physical address
Address:
13800 Commerce Parkway
Address:
MacDonald Dettwiler Bldg.
City: Richmond
State or province: BC
Postal code: V6V 2J3
Country: Canada

Contact voice telephone: 604-233-5003
Contact facsimile telephone: 604-233-5005

Contact electronic mail address: smacritc@mda.ca

Hours of service: 8:00 am - 5:00 pm PST

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Spatial Data Organization Information:

Direct spatial Rreference method: Point & Vector

Point and vector object information:
ESRI terms description:

Feature description: LiDAR DEM

ESRI terms description:
Feature description: Breakline

ESRI terms description:
Feature description: Top of Bank

ESRI terms description:
Feature description: Contours

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Spatial Reference Information:

Horizontal coordinate system definition:
Coordinate system name:
Projected coordinate system name: California State Plane Coordinate Zone 3

Planar:
Grid coordinate system:
Grid coordinate system name: State Plane Coordinate System
State Plane Coordinate System:
SPCS zone identifier: 403
Lambert conformal conic:
Standard parallel: 37:04:00:00
Standard parallel: 38:26:00:00
Longitude of central meridian: -120:30:00
Latitude of projection origin: 36:30:00
False easting: 6561666.667
False northing: 1640416.667

Planar coordinate information:
Planar coordinate encoding method: coordinate pair
Planar distance units: survey feet

Geodetic model:
Horizontal datum name: North American Datum of 1983
Ellipsoid name: Clarke 1866
Semi-major axis: 6378403.701 m
Denominator of flattening ratio: 298.2572221008827

Vertical coordinate system definition:
Altitude system definition:
Altitude datum name: North American Vertical Datum of 1988
Altitude resolution: .001
Altitude distance rnits: feet
Altitude encoding method: Implicit coordinate

Depth system definition:
Depth datum name: Mean sea level
Depth resolution: .01
Depth distance units: feet
Depth encoding method: Implicit coordinate

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Distribution Information:

Distributor:
  Contact information:
    Contact person primary:
      Contact person: Stuart MacRitchie
      Contact organization: Triathlon, Ltd. / MDA Geospatial Services

    Contact address:
      Address type: mailing address
      Address:
        13800 Commerce Parkway
      City: Richmond
      State or province: BC
      Postal code: V6V 2J3
      Country: Canada

    Contact voice telephone: 604-233-5003
    Contact facsimile telephone: 604-233-5005

    Contact electronic mail address: smacritc@mda.ca

    Hours of service: 8:00 am - 5:00 pm PST

Resource description: City, Government

Distribution liability:

The LiDAR data represents the results of data collection/processing for Santa Clara County, California and indicates the general conditions existing at the time of flight. As such, it is only valid for its intended use, content, time and accuracy specifications. The user is responsible for the results of any application of the data other than for its intended purpose.

Standard order process:
  Digital form:
    Digital transfer information:
      Format name: ASCII
      Format specification:
        3D LiDAR
      Format information content:
        XYZI and LAS
      File decompression technique: Uncompressed

    Digital transfer option:
      Online option:
        Computer contact information:
          Network address:
            Network resource name: N/A

  Digital form:

Digital transfer information:
Format name: DWG
Format version number: 2004
Format specification:
3D DWG
Format information content:
Index, Intermediate, Brkline and TOB

Digital form:
Digital transfer information:
Format name: DGN
Format version number: V8
Format specification:
3D DGN
Format information content:
Index, Intermediate, brkline, and TOB

Digital form:
Digital transfer information:
Format name: ESRI
Format version number: personal geodatabase
Format information content:
1 foot, 5 foot, 10 foot, 25 foot contours, breaklines and top of bank

Fees: N/A

Available time period:
Time period information:
Single date/time:
Calendar date: unknown

Back to Top

Metadata Reference Information:

Metadata date: 20060607

Metadata contact:
Contact information:
Contact organization primary:
Contact person: Stuart MacRitchie
Contact organization: Triathlon, Ltd. / MDA Geospatial Services

Contact address:
Address type: mailing and physical address
Address:
13800 Commerce Parkway
Address:
MacDonald Dettwiler Bldg.
City: Richmond
State or province: BC
Postal code: V6V 2J3
Country: Canada

Contact voice telephone: 604-233-5003
Contact facsimile telephone: 604-233-5005

Contact electronic mail address: smacritc@mda.ca

Hours of service: 8:00 am - 5:00 pm PST

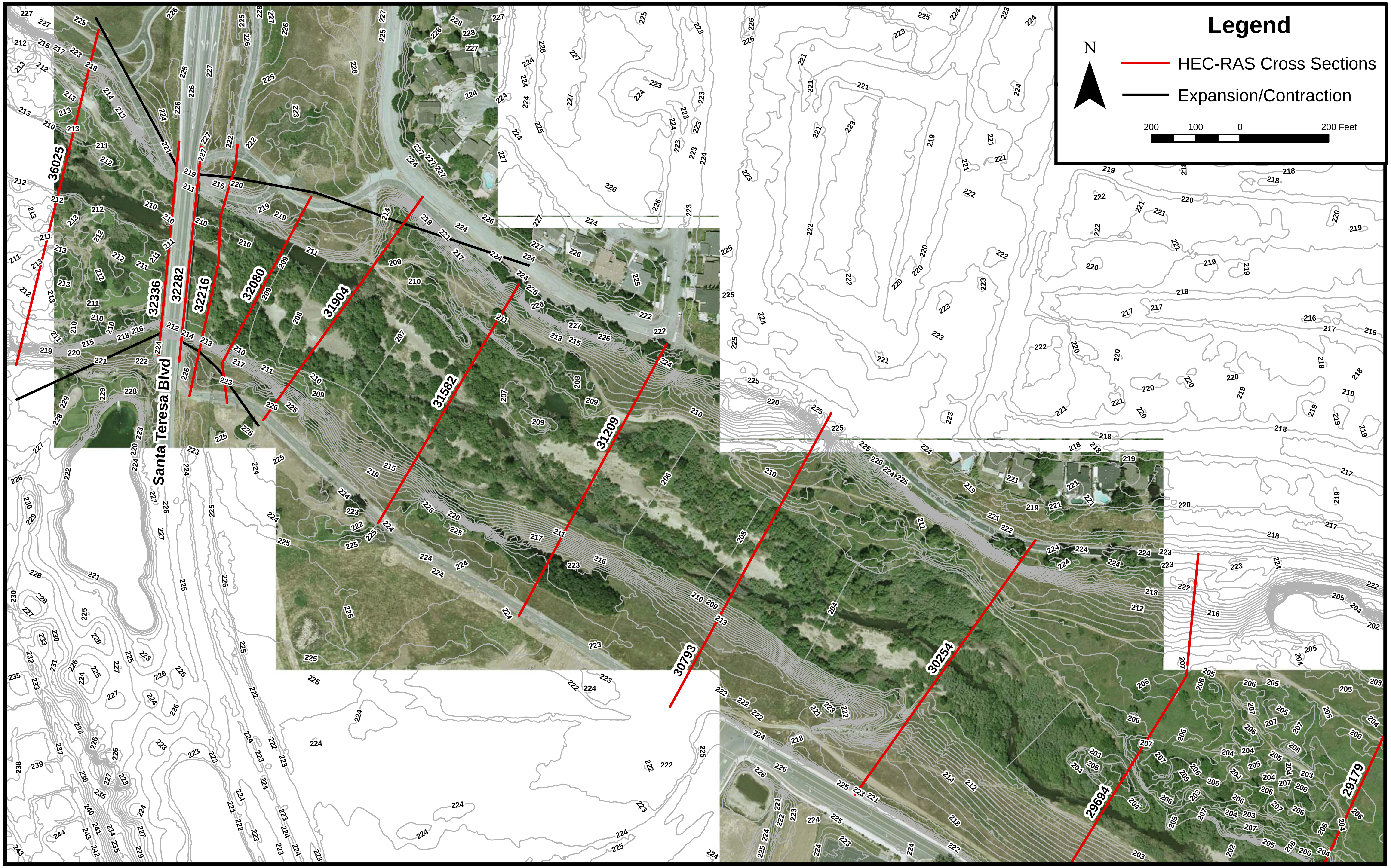
Metadata standard name: FGDC Content Standards for Digital Geospatial Metadata
Metadata standard version: FGDC-STD-001-1998
Metadata time convention: local time

Metadata extensions:
Online linkage: http://www.esri.com/metadata/esriprof80.html
Profile name: ESRI Metadata Profile

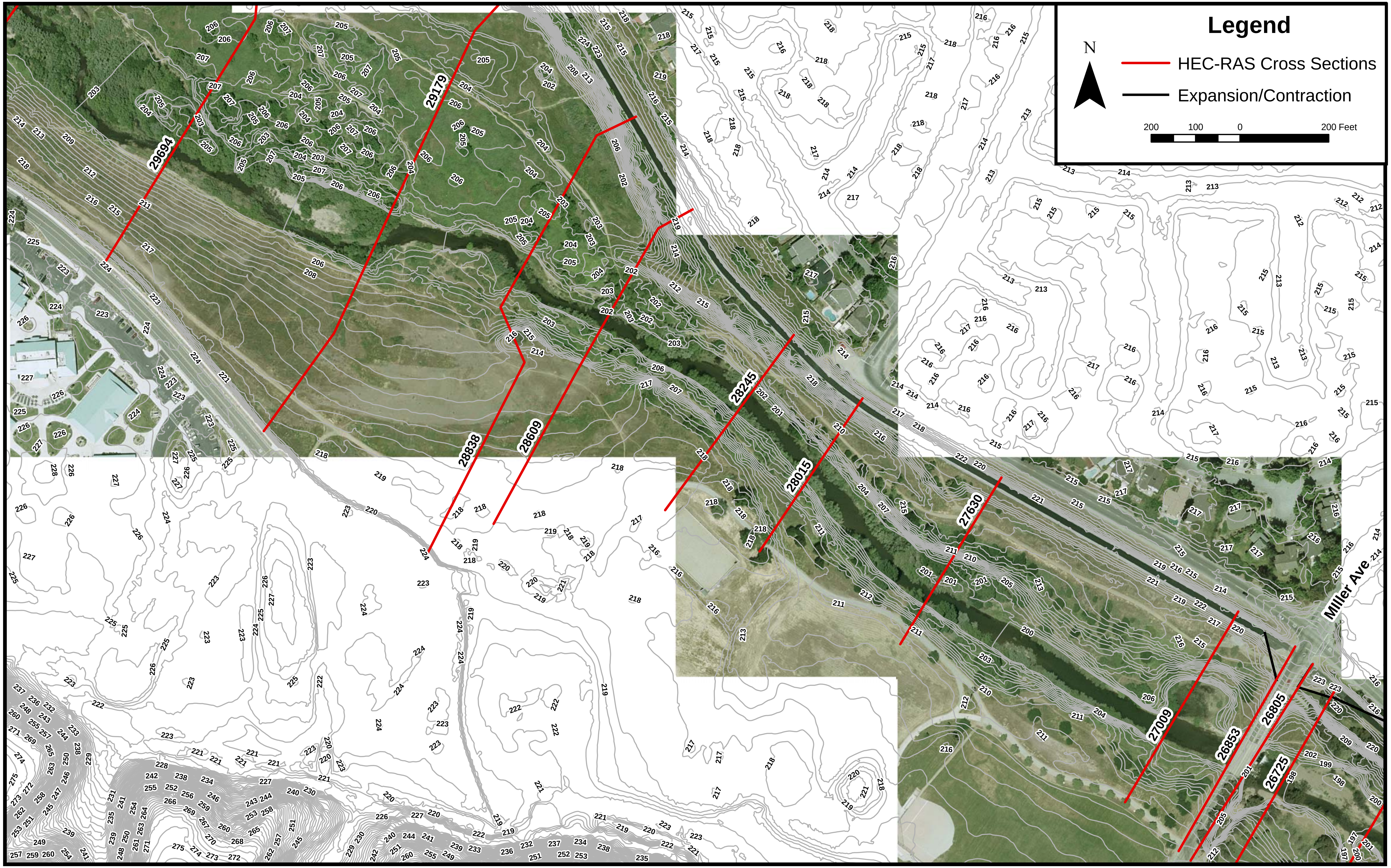
Back to Top

TAB 4

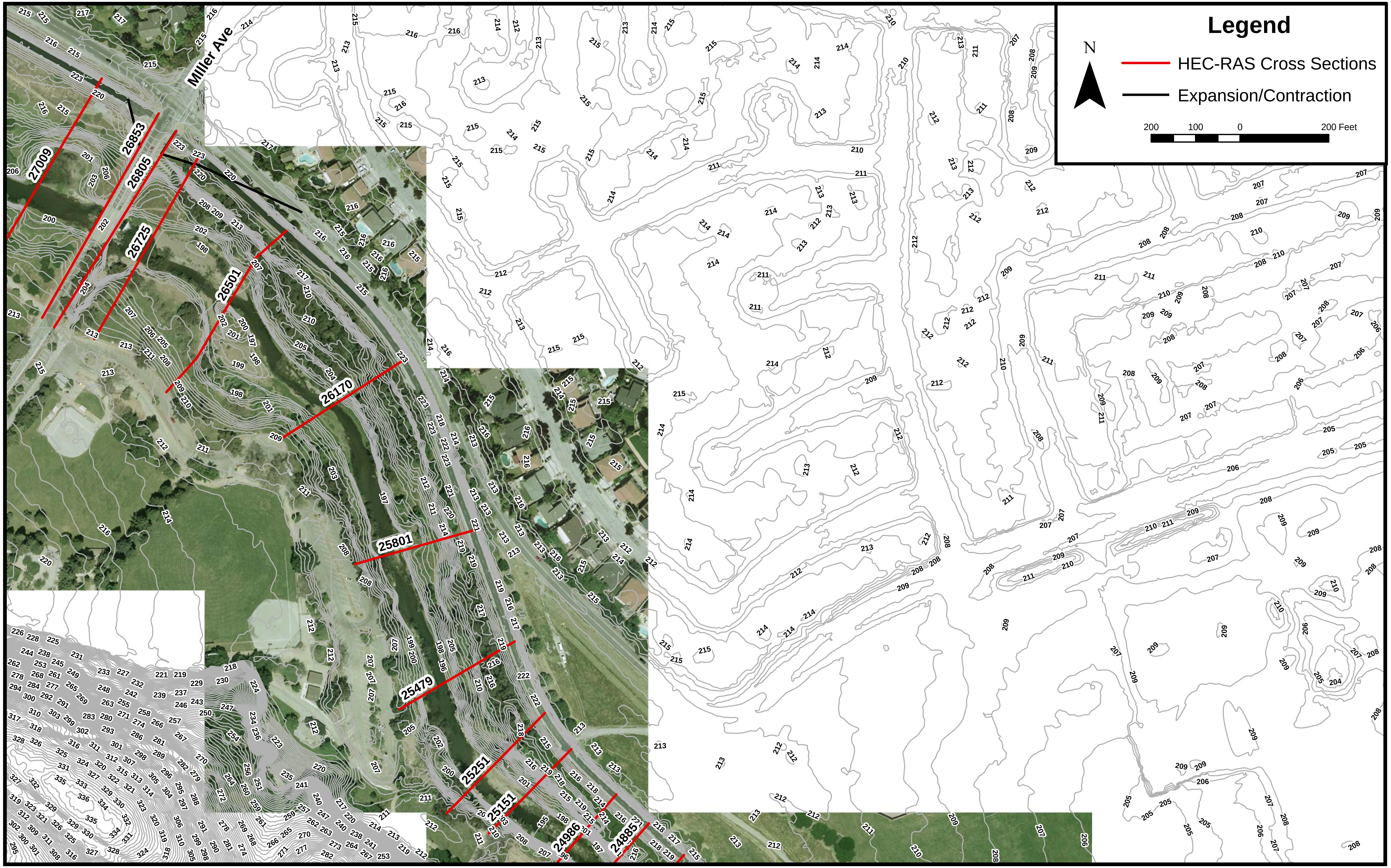
UVAS CREEK LEVEE RECERTIFICATION
WORK MAP - SHEET 1



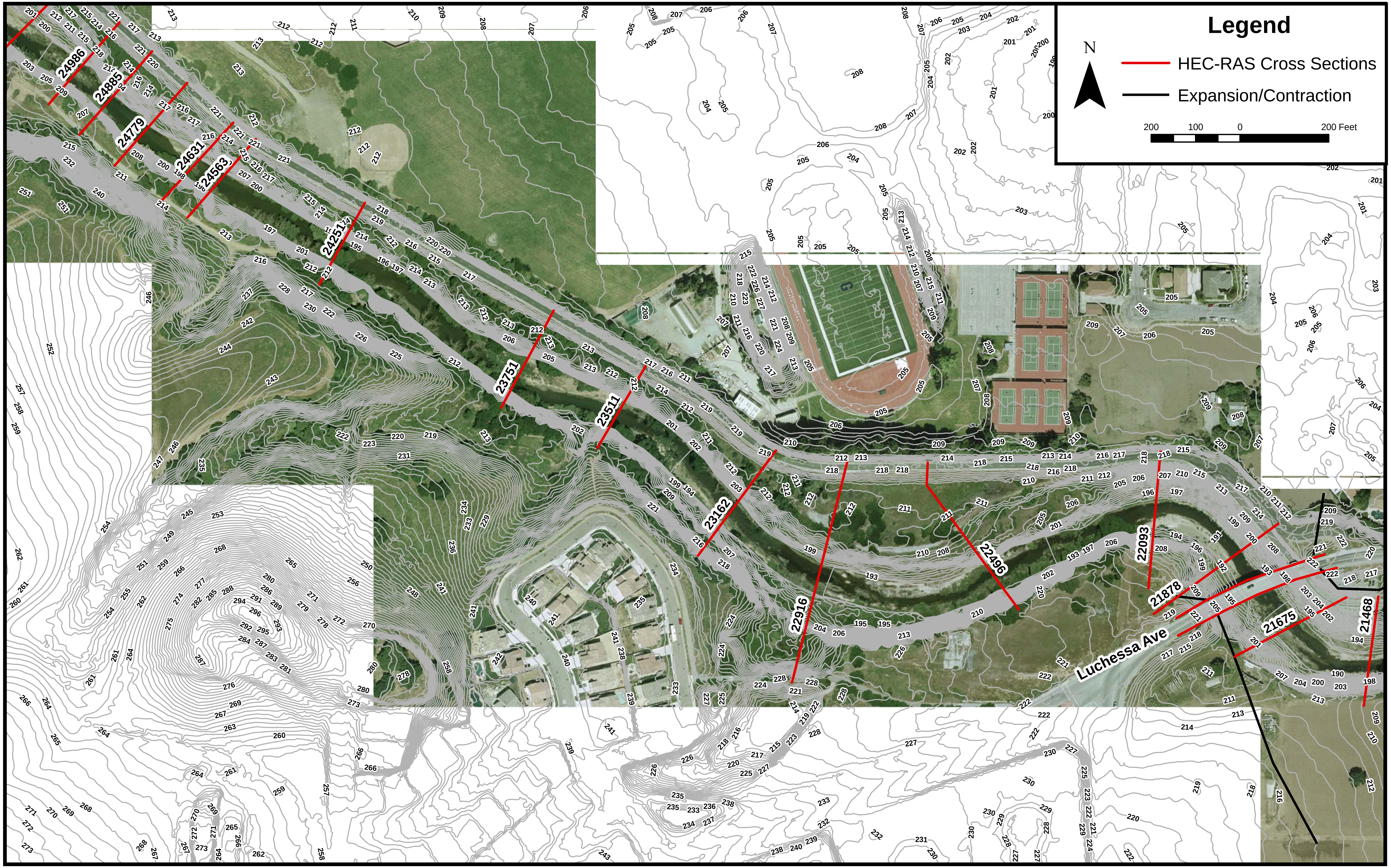
UVAS CREEK LEVEE RECERTIFICATION
WORK MAP - SHEET 2



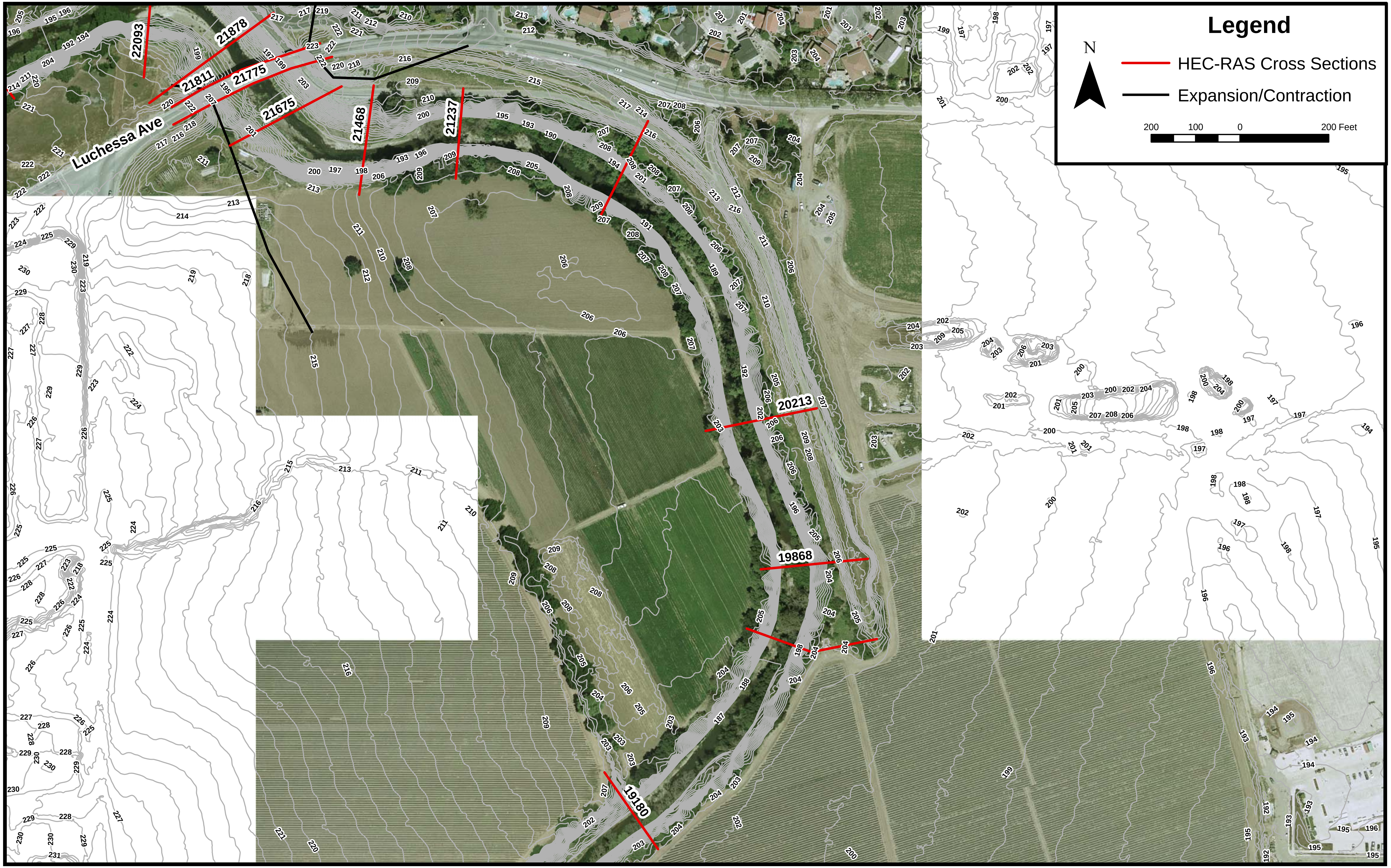
UVAS CREEK LEVEE RECERTIFICATION
WORK MAP - SHEET 3



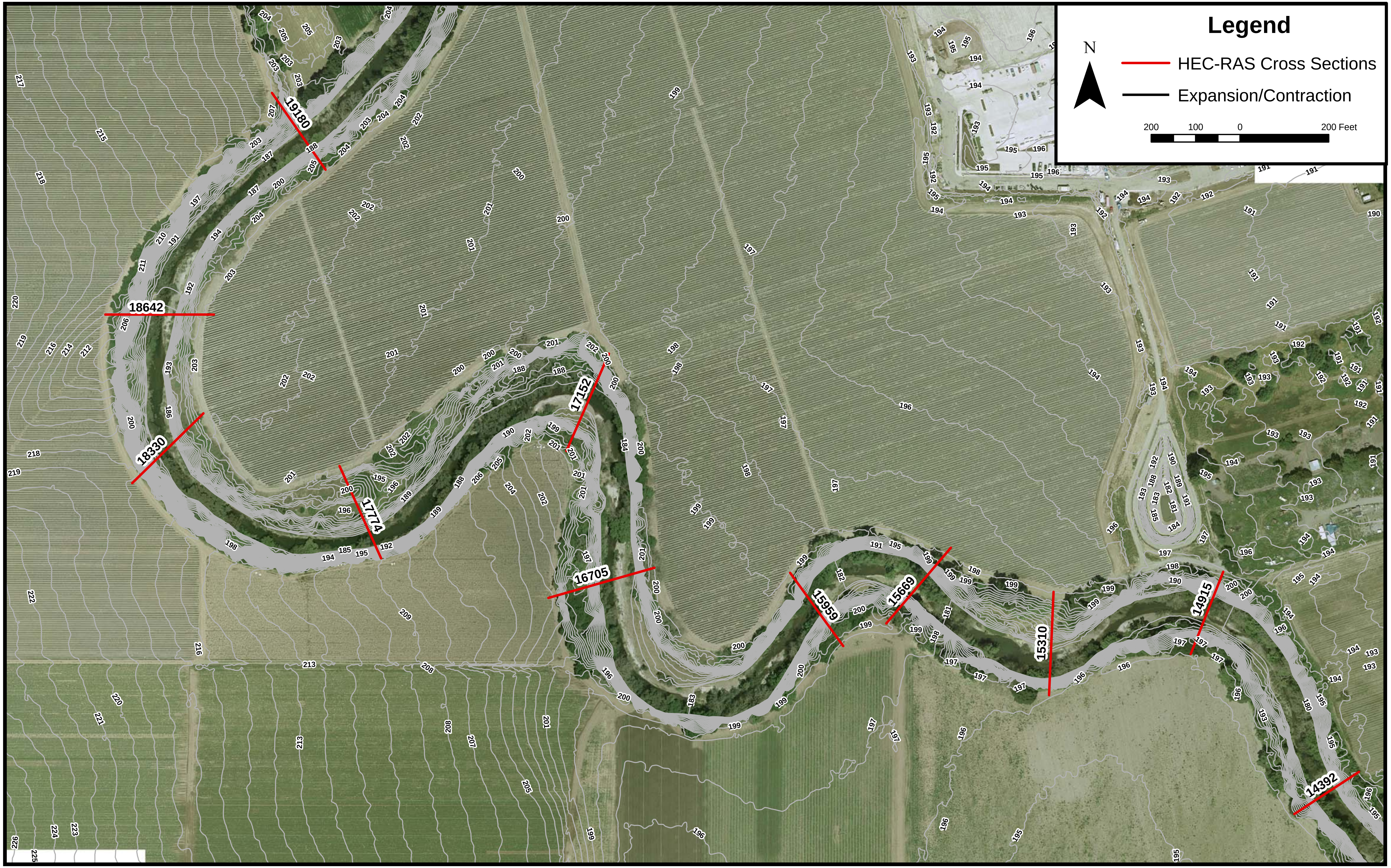
UVAS CREEK LEVEE RECERTIFICATION
WORK MAP - SHEET 4



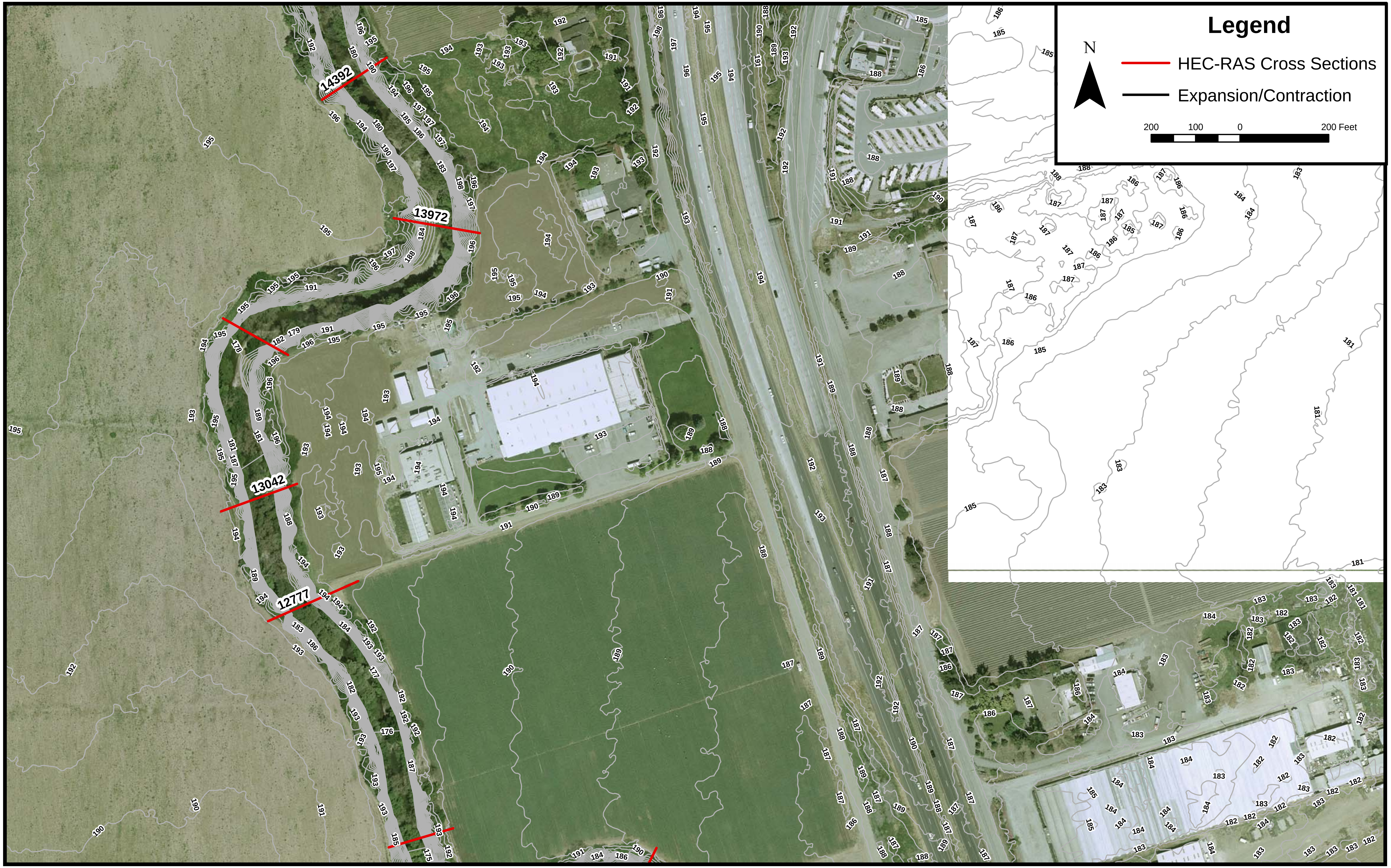
UVAS CREEK LEVEE RECERTIFICATION
WORK MAP - SHEET 5



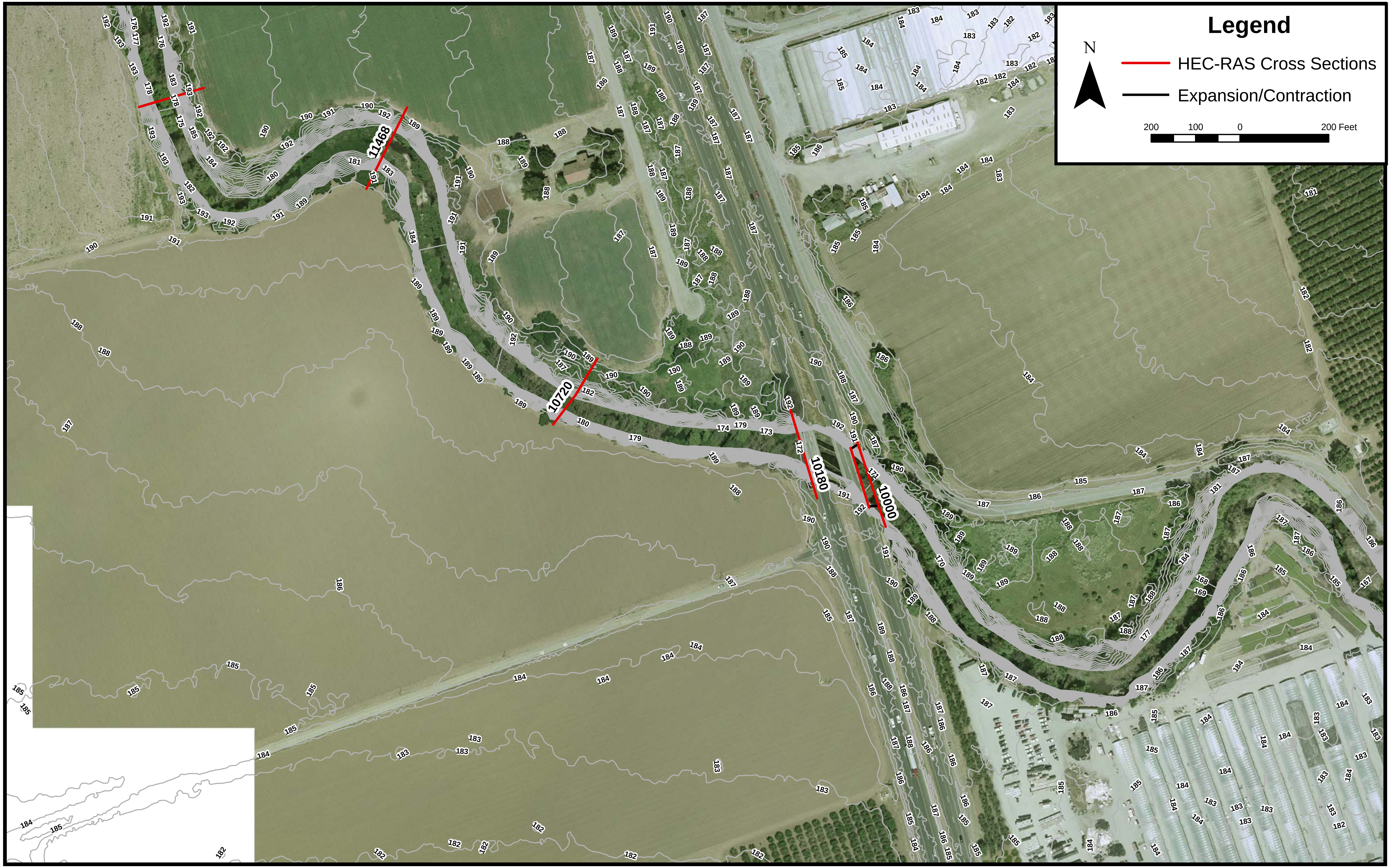
UVAS CREEK LEVEE RECERTIFICATION
WORK MAP - SHEET 6



UVAS CREEK LEVEE RECERTIFICATION
WORK MAP - SHEET 7

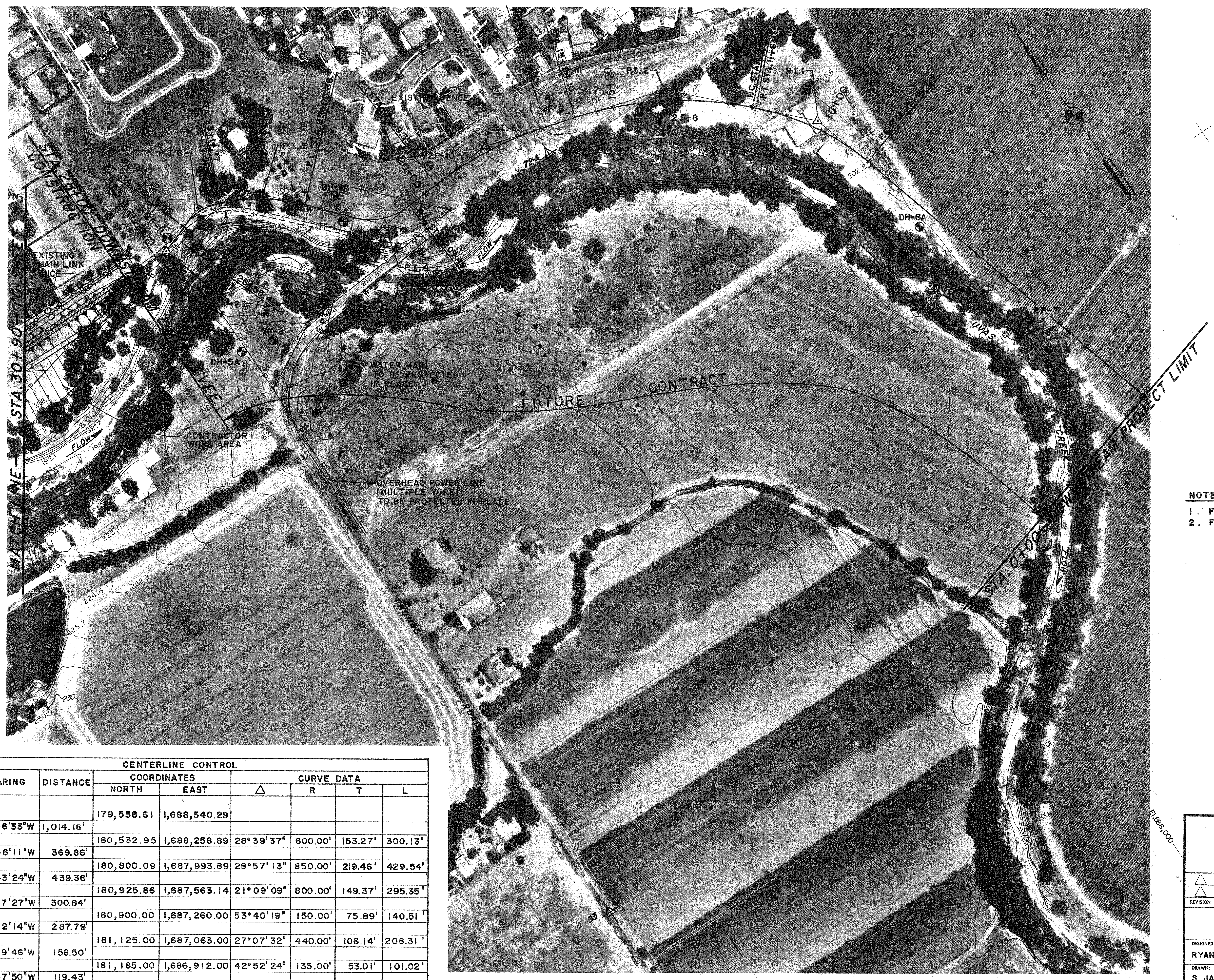


UVAS CREEK LEVEE RECERTIFICATION
WORK MAP - SHEET 8



TAB 5

CONTROL PT.	NORTHING	EASTING	ELEV.	DESC.
72-A	180,822.688	1,687,679.031	205.02	R.R. SPIKE
93	179,241.900	1,686,794.709	224.43	R.R. SPIKE



LEGEND

╤╤╤	LEVEE CONSTRUCTION
▨	BIKE TRAIL
—o—o—	TEMPORARY CONSTRUCTION EASEMENT
—x—x—	EXISTING FENCE
====	HAUL ROAD
●	LOCATION OF SOILS BORING
—xx—xx—	PERMANENT RIGHT-OF-WAY
△	CONTROL POINT
—P—	OVERHEAD POWER LINE
—W—	WATER PIPE LINE

NOTES:

1. FOR BIKE TRAIL AND PATROL ROAD DETAIL, SEE SHEET 9.
2. FOR LOGS OF SOIL BORINGS, SEE SHEETS 14,15,16.

GRAPHIC SCALE

1" = 100' 0 50' 100' 200' 300' 400' 500'

CENTERLINE CONTROL								
PI	BEARING	DISTANCE	COORDINATES		CURVE DATA			
			NORTH	EAST	△	R	T	L
STARTING STATION 0+00			179,558.61	1,688,540.29				
	N16°06'33"W	1,014.16'						
PI 1			180,532.95	1,688,258.89	28°39'37"	600.00'	153.27'	300.13'
	N44°46'11"W	369.86'						
PI 2			180,800.09	1,687,993.89	28°57'13"	850.00'	219.46'	429.54'
	N73°43'24"W	439.36'						
PI 3			180,925.86	1,687,563.14	21°09'09"	800.00'	149.37'	295.35'
	S85°07'27"W	300.84'						
PI 4			180,900.00	1,687,260.00	53°40'19"	150.00'	75.89'	140.51'
	N41°12'14"W	287.79'						
PI 5			181,125.00	1,687,063.00	27°07'32"	440.00'	106.14'	208.31'
	N68°19'46"W	158.50'						
PI 6			181,185.00	1,686,912.00	42°52'24"	135.00'	53.01'	101.02'
	S68°47'50"W	119.43'						
PI 7			181,140.00	1,686,796.00	20°35'33"	190.00'	34.52'	68.29'
	S89°23'23"W	750.30'						

REVISION	DATE	DESCRIPTION	BY	BY
△				
△				

DEPARTMENT OF THE ARMY
SACRAMENTO DISTRICT, CORPS OF ENGINEERS
SACRAMENTO, CALIFORNIA

DESIGNED: RYAN/TALUBAN
DRAWN: S. JANG
CHECKED: K. MYERS

PAJARO RIVER, CALIFORNIA
UVAS CREEK LEVEE AT GILROY
SANTA CLARA COUNTY, CALIFORNIA
LEVEE IMPROVEMENT AND CONSTRUCTION
PHASE I

PLAN

STA. 0+00 TO STA. 30+90

SUBMITTED: M J Bonner
CHIEF, CIVIL DESIGN SECTION C

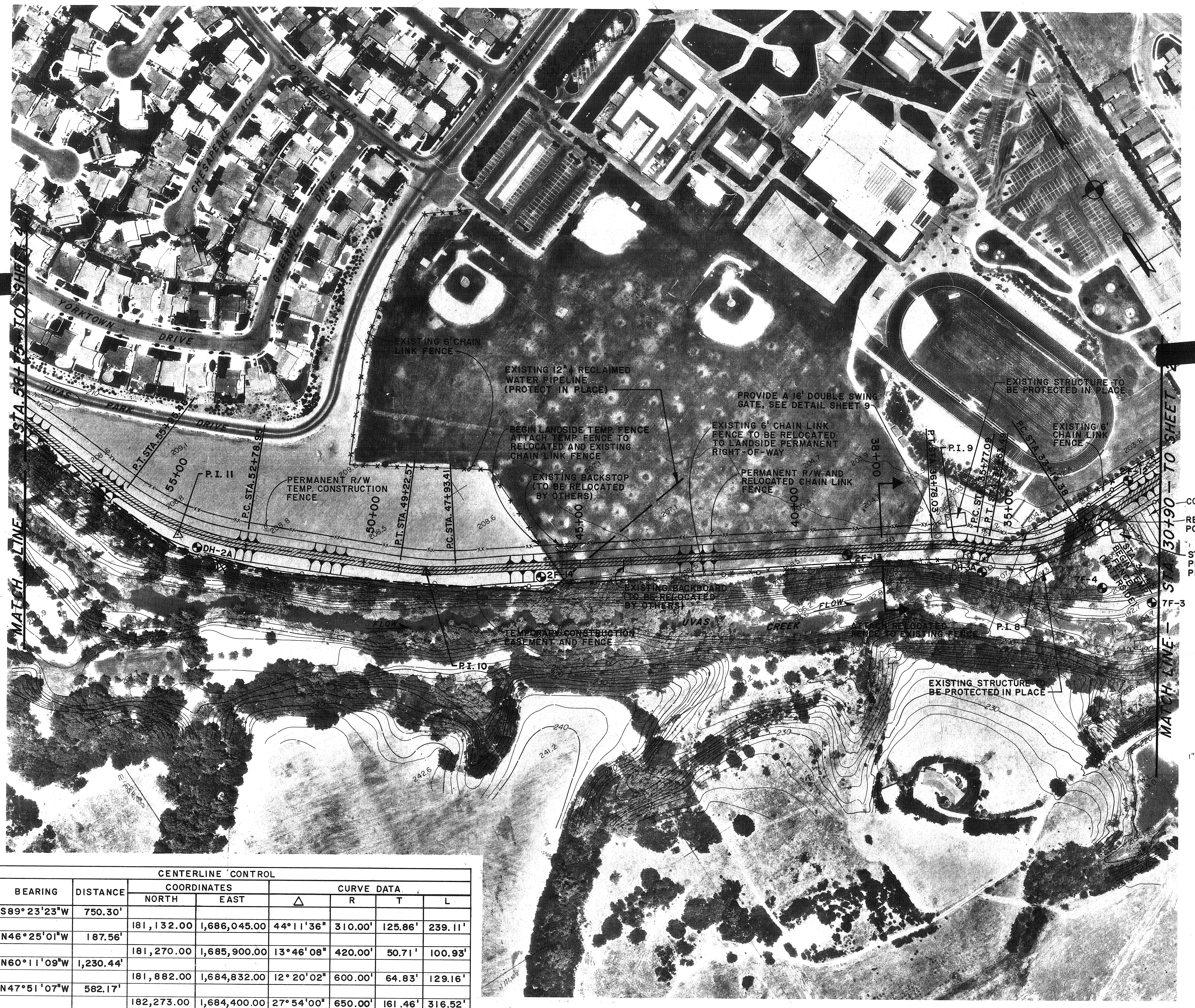
DATE APPROVED: JUL 21 1977

SCALE: 1" = 100'
SPEC. No. 7495
SHEET 2
FILE No. PA-18-4-05

SANTA CLARA_CA Work Maps
SANTA CLARA_CA0225

ENVIRONMENTAL ENHANCEMENT THRU ENGINEERING

FUNCTION ANALYSIS - VE PAYS


MATCH LINE — STA. 58+75 — TO SHEET 4
MATCH LINE — STA. 30+90 — TO SHEET 2
YORKTOWN DRIVE
CHESAPEAKE PLACE
GREENWICH DRIVE
ORCHARD DR
UVAS PARK DRIVE
EXISTING 6' CHAIN LINK FENCE
EXISTING 12"ϕ RECLAIMED WATER PIPELINE (PROTECT IN PLACE)
PROVIDE A 16' DOUBLE SWING GATE, SEE DETAIL SHEET 9
EXISTING STRUCTURE TO BE PROTECTED IN PLACE
EXISTING 6' CHAIN LINK FENCE
BEGIN LANDSIDE TEMP. FENCE ATTACH TEMP. FENCE TO RELOCATED AND EXISTING CHAIN LINK FENCE
EXISTING 6' CHAIN LINK FENCE TO BE RELOCATED TO LANDSIDE PERMANENT RIGHT-OF-WAY
EXISTING BACKSTOP (TO BE RELOCATED BY OTHERS)
PERMANENT R/W AND RELOCATED CHAIN LINK FENCE
PERMANENT R/W TEMP. CONSTRUCTION FENCE
P.T. STA. 55+13.48
P.I. 11
55+00
P.C. STA. 52+78.55
50+00
P.T. STA. 49+22.57
P.C. STA. 47+93.41
45+00
40+00
38+00
P.T. STA. 36+78.03
P.I. 9
P.C. STA. 35+77.09
P.T. STA. 35+53.48
35+00
P.C. STA. 32+14.38
DH-2A
2F-14
2F-13
2F-12
DH-3A
7F-4
7F-3
EXISTING BACKBOARD (TO BE RELOCATED BY OTHERS)
FLOW
UVAS CREEK
TEMPORARY CONSTRUCTION EASEMENT AND FENCE
ATTACH RELOCATED FENCE TO EXISTING FENCE
P.I. 10
P.I. 8
STA. 32+ BEGIN TEMP. FENCE (WATERSIDE)
EXISTING STRUCTURE TO BE PROTECTED IN PLACE
CONTRACTOR WORK AREA
REMOVE EXISTING SWIMMING POOL AND BACKFILL
STRUCTURE TO BE PROTECTED IN PLACE
230
240
241.2
242.6
N
E1,685,000
N183,000
E1,686,000
E1,687,000
N182,000
N181,000
E1,684,000
N182,000
N181,000
E1,685,000
E1,686,000
E1,687,000

CONTROL PT.	NORTHING	EASTING	ELEV.	DESC.
83	182,151.309	1,684,443.072	215.40	5/8" REBAR

LEGEND

◉	LOCATION OF SOILS BORING
⌓⌓⌓	LEVEE CONSTRUCTION
▨	BIKE TRAIL
—xx—xx—	PERMANENT RIGHT-OF-WAY
—x—x—	EXISTING FENCE
—o—o—	TEMPORARY CONSTRUCTION EASEMENT
△	CONTROL POINT

NOTES

1. FOR BIKE TRAIL AND PATROL ROAD DETAIL, SEE SHEET 9.
2. FOR LOGS OF SOILS BORINGS, SEE SHEETS 16, 17, 18

GRAPHIC SCALE

1" = 100' 0 50' 100' 200' 300' 400' 500'

CENTERLINE CONTROL								
PI	BEARING	DISTANCE	COORDINATES		CURVE DATA			
			NORTH	EAST	△	R	T	L
	S89°23'23"W	750.30'						
PI 8			181,132.00	1,686,045.00	44°11'36"	310.00'	125.86'	239.11'
	N46°25'01"W	187.56'						
PI 9			181,270.00	1,685,900.00	13°46'08"	420.00'	50.71'	100.93'
	N60°11'09"W	1,230.44'						
PI 10			181,882.00	1,684,832.00	12°20'02"	600.00'	64.83'	129.16'
	N47°51'07"W	582.17'						
PI 11			182,273.00	1,684,400.00	27°54'00"	650.00'	161.46'	316.52'
	N19°57'07"W	937.23'						

REVISION	DATE	DESCRIPTION	BY	BY
△				
△				

DEPARTMENT OF THE ARMY
SACRAMENTO DISTRICT, CORPS OF ENGINEERS
SACRAMENTO, CALIFORNIA

DESIGNED: RYAN/TALUBAN
DRAWN: S. JANG
CHECKED: K. MYERS

PAJARO RIVER, CALIFORNIA
UVAS CREEK LEVEE AT GILROY
SANTA CLARA COUNTY, CALIFORNIA
LEVEE IMPROVEMENT AND CONSTRUCTION
PHASE I
PLAN
STA. 30+90 TO STA. 58+75

SUBMITTED: M J Bonner
CHIEF, CIVIL DESIGN SECTION C

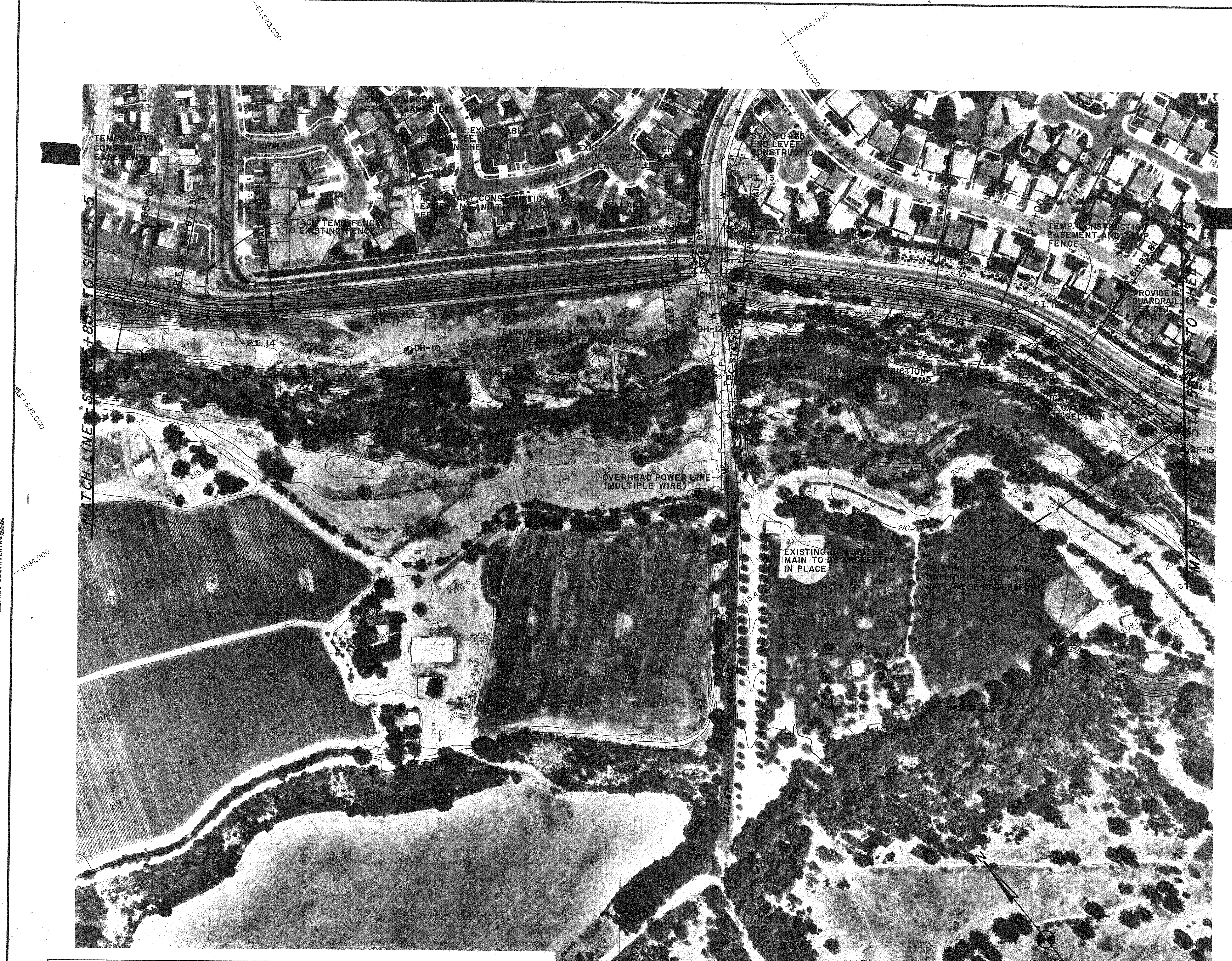
DATE APPROVED: JUL 2 1 1987

SCALE: 1" = 100'
SPEC. No. 7495
SHEET 3
FILE No. PA-18-4-05

ENVIRONMENTAL ENHANCEMENT THRU ENGINEERING

SANTA CLARA_CA Work Maps
SANTA CLARA_CA0226

SAFETY PAYS


E1,683,000
N184,000
E1,684,000
E1,685,000
N183,000
N182,000
E1,682,000
MATCH LINE STA. 85+80 TO SHEET 5
MATCH LINE STA. 58+75 TO SHEET 3
TEMPORARY CONSTRUCTION EASEMENT
85+00
P.T. STA. 85+87.73
WREN AVENUE
ARMAND COURT
P.C. STA. 81+05.
ATTACH TEMP FENCE TO EXISTING FENCE
END TEMPORARY FENCE (LANDSIDE)
RELOCATE EXIST. CABLE FENCE, SEE CROSS SECTION SHEET 8.
EXISTING 10" WATER MAIN TO BE PROTECTED IN PLACE
HOXETT ST.
TEMPORARY CONSTRUCTION EASEMENT AND TEMPORARY FENCE
PROVIDE BOLLARDS & LEVEE PIPE GATE
BEGIN LEVEE CONST. STA. 71+40
BEGIN BIKE TRAIL
UVAS CREEK DRIVE
80+00
P.I. 14
2F-17
DH-10
P.T. STA. 72+22
DH-1A
DH-12
P.C. STA. 70+
FLOW
OVERHEAD POWER LINE (MULTIPLE WIRE)
STA. 70+65 END LEVEE CONSTRUCTION
P.I. 13
YORKTOWN DRIVE
PLYMOUTH DR.
P.T. STA. 65+
PROVIDE BOLLARDS AND LEVEE PIPE GATE
65+00
64+00
TEMP. CONSTRUCTION EASEMENT AND TEMP. FENCE
P.C. STA. 61+63.61
PROVIDE 16' GUARDRAIL, SEE DET. SHEET 9.
P.I. 12
2F-16
EXISTING PAVED BIKE TRAIL
TEMP CONSTRUCTION EASEMENT AND TEMP. FENCE
UVAS CREEK
RELOCATE BIKE TRAIL OVER LEVEE SECTION
60+00
2F-15
EXISTING 10" ϕ WATER MAIN TO BE PROTECTED IN PLACE
EXISTING 12" ϕ RECLAIMED WATER PIPELINE (NOT TO BE DISTURBED)
MILLER AVENUE
N

[redacted]

CONTROL PT.	NORTHING	EASTING	ELEV.	DESC.
85	183,675.669	1,683,532.209	216.72	R.R. SPIKE

LEGEND

●	LOCATION OF SOILS BORING
⊼⊼⊼	LEVEE CONSTRUCTION
—XX—XX—	PERMANENT RIGHT-OF-WAY
—P—	OVERHEAD POWER LINE
—X—X—	EXISTING FENCE
-------	EXISTING PAVED BIKE TRAIL
▨	BIKE TRAIL
—W—	WATER PIPE LINE
—o—o—	TEMPORARY CONSTRUCTION EASEMENT
⊕	CONTROL POINT

NOTES:

1. FOR BIKE TRAIL AND PATROL ROAD DETAIL, SEE SHEET 9.
2. FOR LOGS OF SOILS BORINGS, SEE SHEET 18, 19.
3. FOR LEVEE PIPE GATE AND BOLLARD DETAIL, SEE SHEET 9.

GRAPHIC SCALE

1"=100' 0 50' 100' 200' 300' 400' 500'

E1,684,000

CENTERLINE CONTROL								
PI	BEARING	DISTANCE	COORDINATES		CURVE DATA			
			NORTH	EAST	△	R	T	L
	N 19°57'07"W	937.23'						
PI 12			183,160.00	1,684,078.00	28°05'01"	775.00'	193.83'	379.87'
	N48°02'08"W	739.96'						
PI 13			183,660.00	1,683,522.00	12°40'08"	950.00'	105.46'	210.06'
	N60°42'16"W	1,153.82'						
PI 14			184,225.00	1,682,515.00	16°46'54"	800.00'	118.00'	234.32'
	N43°55'22"W	412.04'						

N183,000 E1,682,000 N182,000 E1,683,000

SANTA CLARA_CA Work Maps
SANTA CLARA_CA0227

REVISION	DATE	DESCRIPTION	BY	BY
△				
△				

DEPARTMENT OF THE ARMY
SACRAMENTO DISTRICT, CORPS OF ENGINEERS
SACRAMENTO, CALIFORNIA

DESIGNED: RYAN/TALUBAN
DRAWN: S. JANG
CHECKED: K. MYERS

PAJARO RIVER, CALIFORNIA
UVAS CREEK LEVEE AT GILROY
SANTA CLARA COUNTY, CALIFORNIA
LEVEE IMPROVEMENT AND CONSTRUCTION
PHASE I

PLAN

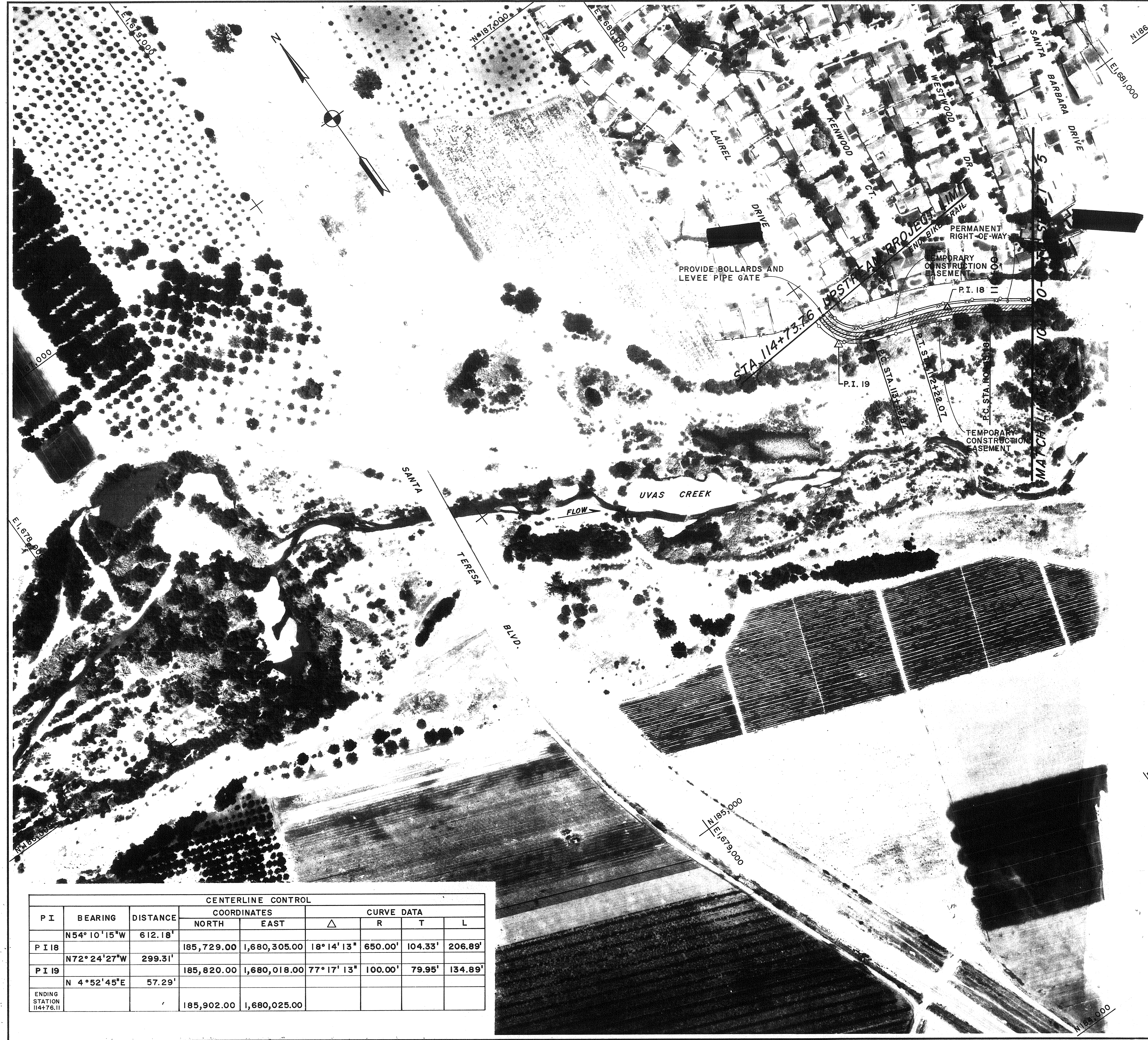
STA. 58+75 TO STA. 85+80

SUBMITTED: M J Bonner
CHIEF, CIVIL DESIGN SECTION C

DATE APPROVED: JUL 21 1987

SCALE: 1" = 100'
SPEC. No. 7495
SHEET 4
FILE No. PA-18-4-05

ENVIRONMENTAL
ENHANCEMENT
THRU ENGINEERING



LEGEND

▨	BIKE TRAIL
—o—o—	TEMPORARY CONSTRUCTION EASEMENT
—xx—xx—	PERMANENT RIGHT-OF-WAY
—x—x—	EXISTING FENCE

NOTES:

1. FOR BIKE TRAIL AND PATROL ROAD DETAIL, SEE SHEET 9.
2. FOR LEVEE PIPE GATE AND BOLLARD DETAILS, SEE SHEET 9.

GRAPHIC SCALE

1" = 100' 0 50' 100' 200' 300' 400' 500'

E1,681,000
N185,000
N184,000
E1,680,000

CENTERLINE CONTROL								
PI	BEARING	DISTANCE	COORDINATES		CURVE DATA			
			NORTH	EAST	△	R	T	L
	N54° 10' 15" W	612.18'						
PI 18			185,729.00	1,680,305.00	18° 14' 13"	650.00'	104.33'	206.89'
	N72° 24' 27" W	299.31'						
PI 19			185,820.00	1,680,018.00	77° 17' 13"	100.00'	79.95'	134.89'
	N 4° 52' 45" E	57.29'						
ENDING STATION 114+76.11		'	185,902.00	1,680,025.00				

REVISION	DATE	DESCRIPTION	BY	BY
△				
△				

DEPARTMENT OF THE ARMY
SACRAMENTO DISTRICT, CORPS OF ENGINEERS
SACRAMENTO, CALIFORNIA

DESIGNED: RYAN / TALUBAN
DRAWN: S. JANG
CHECKED: K. MYERS

PAJARO RIVER, CALIFORNIA
UVAS CREEK LEVEE AT GILROY
SANTA CLARA COUNTY, CALIFORNIA
LEVEE IMPROVEMENT AND CONSTRUCTION
PHASE I

PLAN

STA. 109+00 TO STA. 114+73.76

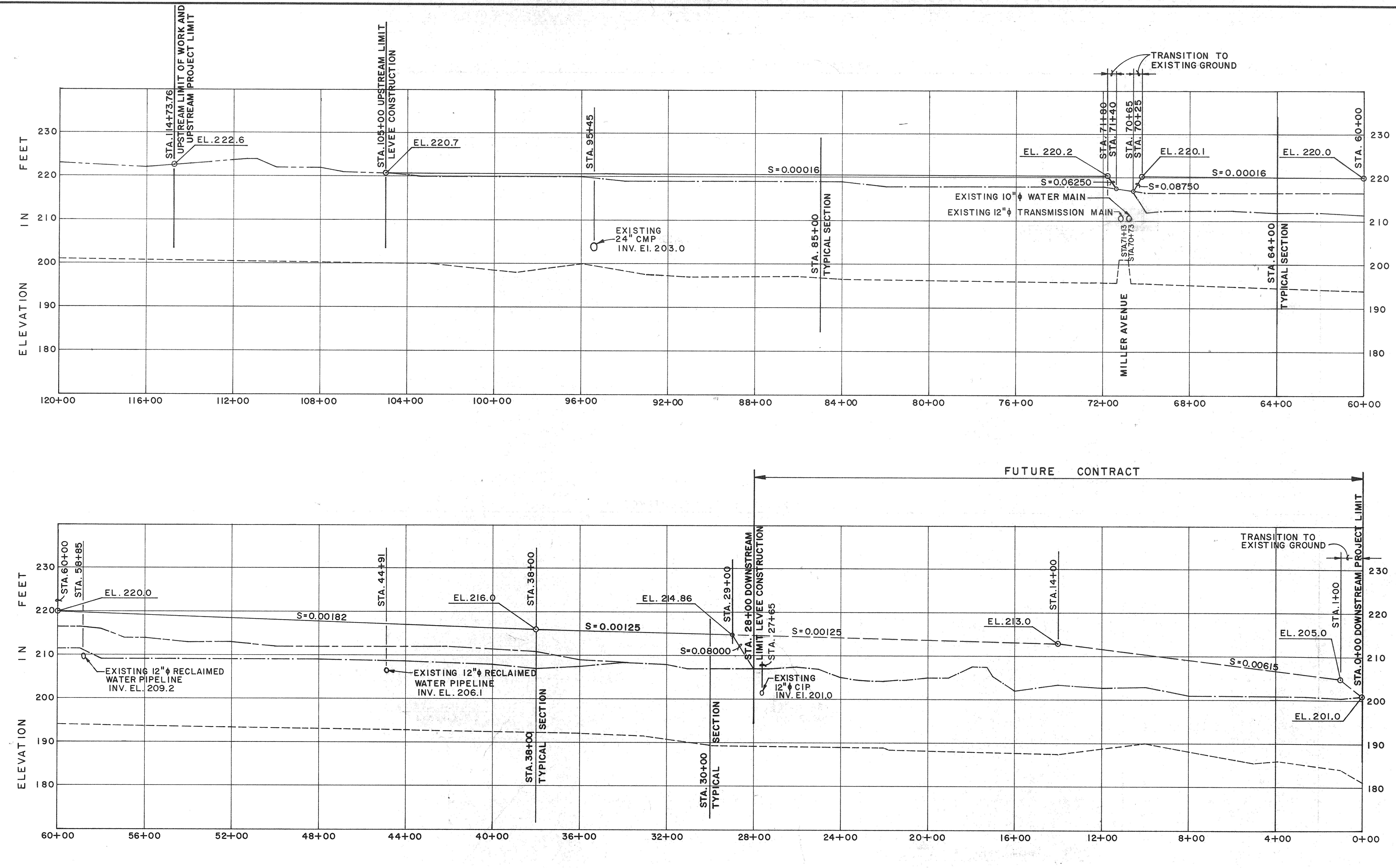
SUBMITTED:
M J Bonn
CHIEF, CIVIL DESIGN SECTION C

DATE APPROVED: JUL 21 1987

SCALE: 1" = 100'
SPEC. No. 7495
SHEET 6
FILE No. PA-18-4-05

ENVIRONMENTAL ENHANCEMENT THRU ENGINEERING

FUNCTIONAL ANALYSIS - VE PAYS



NOTE:
SEE SHEET 8 FOR CROSS SECTIONS

GRAPHIC SCALES

1" = 10' 0 5' 10' 20' 30' 40' 50' VERT.
1" = 200' 0 100' 200' 400' 600' 800' 1000' HORIZ.

LEGEND

—·—·— EXISTING GROUND-℄ ALIGNMENT
— — — EXISTING GROUND-LEFT BANK.
○——○ DESIGN GRADE
- - - - - EXISTING CHANNEL INVERT

REVISION	DATE	DESCRIPTION	BY	BY
△				
△				

DEPARTMENT OF THE ARMY
SACRAMENTO DISTRICT, CORPS OF ENGINEERS
SACRAMENTO, CALIFORNIA

DESIGNED: RYAN/TALUBAN
DRAWN: S. JANG
CHECKED: K. MYERS

PAJARO RIVER, CALIFORNIA
UVAS CREEK LEVEE AT GILROY
SANTA CLARA COUNTY, CALIFORNIA
LEVEE IMPROVEMENT AND CONSTRUCTION
PHASE I
PROFILE

SUBMITTED: M J Bonner
CHIEF, CIVIL DESIGN SECTION C
DATE APPROVED: JUL 21 1987
SCALE: AS SHOWN
SPEC. No. 7495
SHEET 7
FILE No. PA-18-4-05

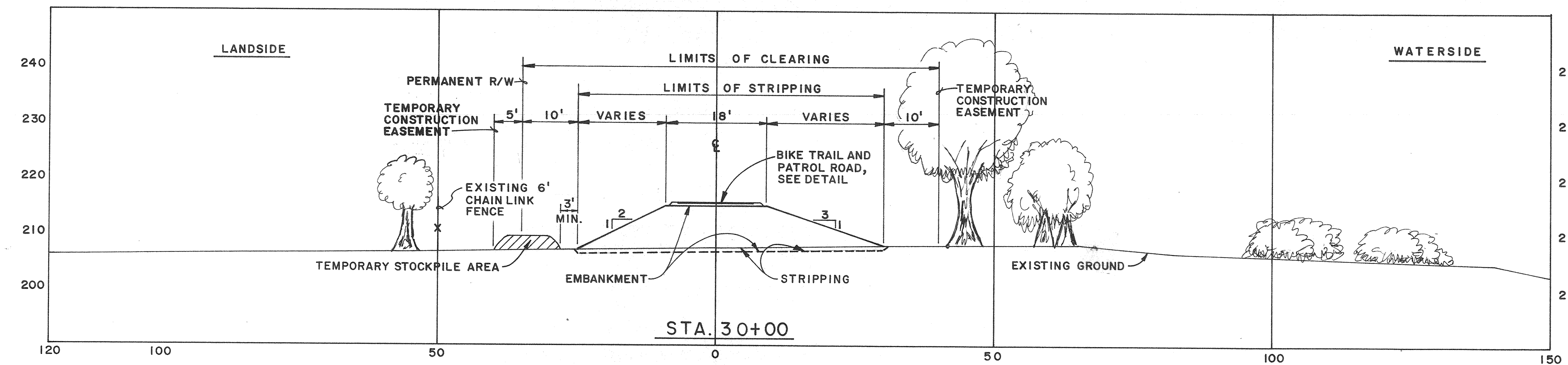
SANTA CLARA_CA Work Maps
SANTA CLARA_CA0230

SAFETY PAYS

ENVIRONMENTAL ENHANCEMENT THRU ENGINEERING

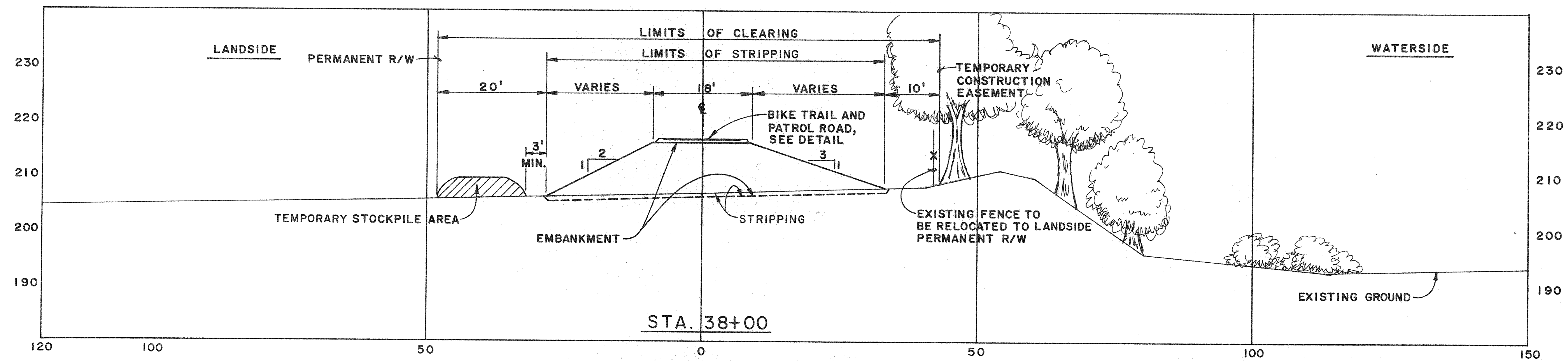
FUNCTION ANALYSIS - VE PAYS

ELEVATION IN FEET



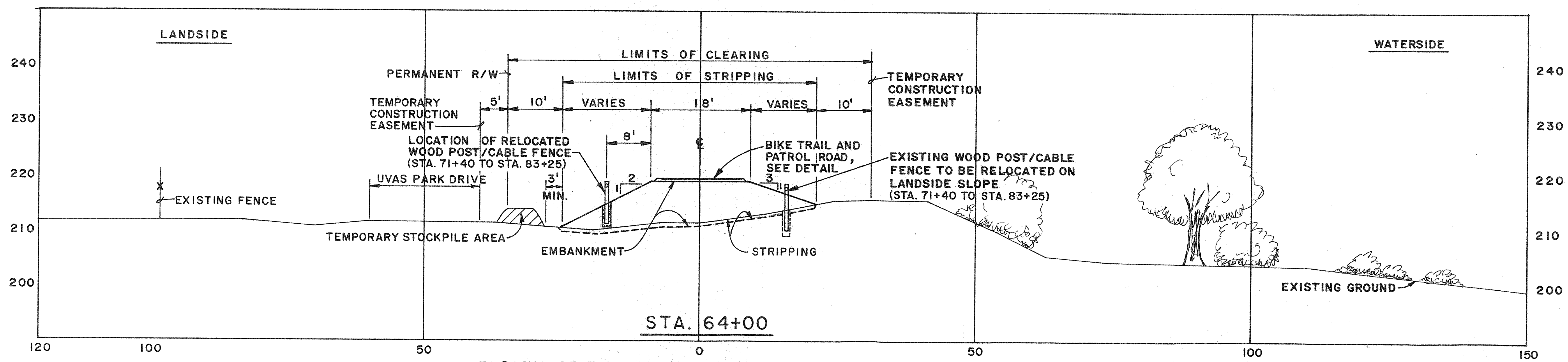
STA. 30+00

TYPICAL SECTION FOR STA. 28+00 TO STA. 35+00



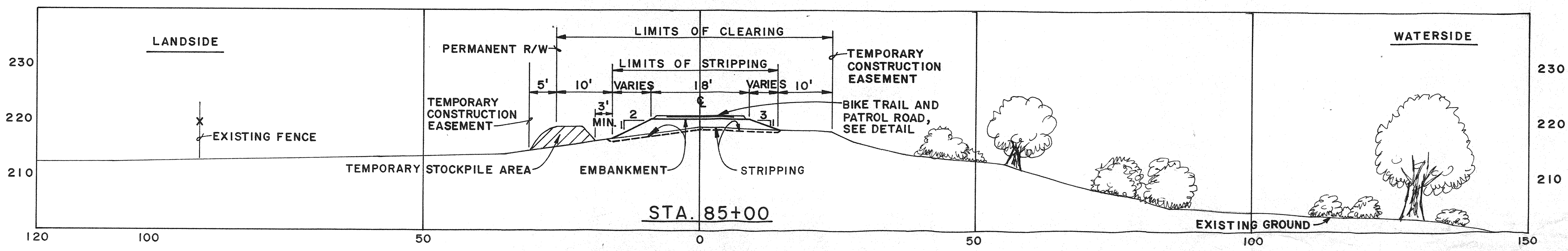
STA. 38+00

TYPICAL SECTION FOR STA. 35+00 TO STA. 60+00


LANDSIDE
WATERSIDE
LIMITS OF CLEARING
LIMITS OF STRIPPING
PERMANENT R/W
TEMPORARY CONSTRUCTION EASEMENT
5'
10'
VARIES
18'
VARIES
10'
8'
℄
LOCATION OF RELOCATED WOOD POST/CABLE FENCE (STA. 71+40 TO STA. 83+25)
UVAS PARK DRIVE
3' MIN.
1
2
3
1
BIKE TRAIL AND PATROL ROAD, SEE DETAIL
TEMPORARY CONSTRUCTION EASEMENT
EXISTING WOOD POST/CABLE FENCE TO BE RELOCATED ON LANDSIDE SLOPE (STA. 71+40 TO STA. 83+25)
EXISTING FENCE
TEMPORARY STOCKPILE AREA
EMBANKMENT
STRIPPING
EXISTING GROUND
240
230
220
210
200
120
100
50
0
50
100
150

STA. 64+00

TYPICAL SECTION FOR STA. 60+00 TO STA. 83+00



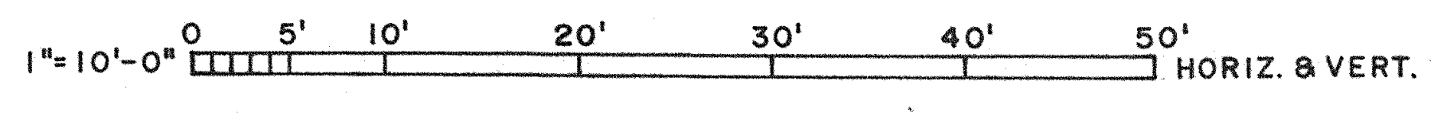
STA. 85+00

TYPICAL SECTION FOR STA. 83+00 TO STA. 114+73.76

NOTES:

1. ALL CROSS SECTIONS ARE ORIENTED LOOKING DOWNSTREAM.
2. FOR BIKE TRAIL AND PATROL ROAD DETAIL, SEE SHEET 9.
3. CONTRACTOR SHALL NOT DEFACE, INJURE, OR DESTROY TREES OR SHRUBS, NOR REMOVE OR CUT THEM OUTSIDE OF THE LIMITS OF CLEARING.

GRAPHIC SCALE



REVISION	DATE	DESCRIPTION	BY	BY

DEPARTMENT OF THE ARMY
SACRAMENTO DISTRICT, CORPS OF ENGINEERS
SACRAMENTO, CALIFORNIA

DESIGNED: RYAN/TALUBAN
DRAWN: S. JANG
CHECKED: K. MYERS

PAJARO RIVER, CALIFORNIA
UVAS CREEK LEVEE AT GILROY
SANTA CLARA COUNTY, CALIFORNIA
LEVEE IMPROVEMENT AND CONSTRUCTION
PHASE I

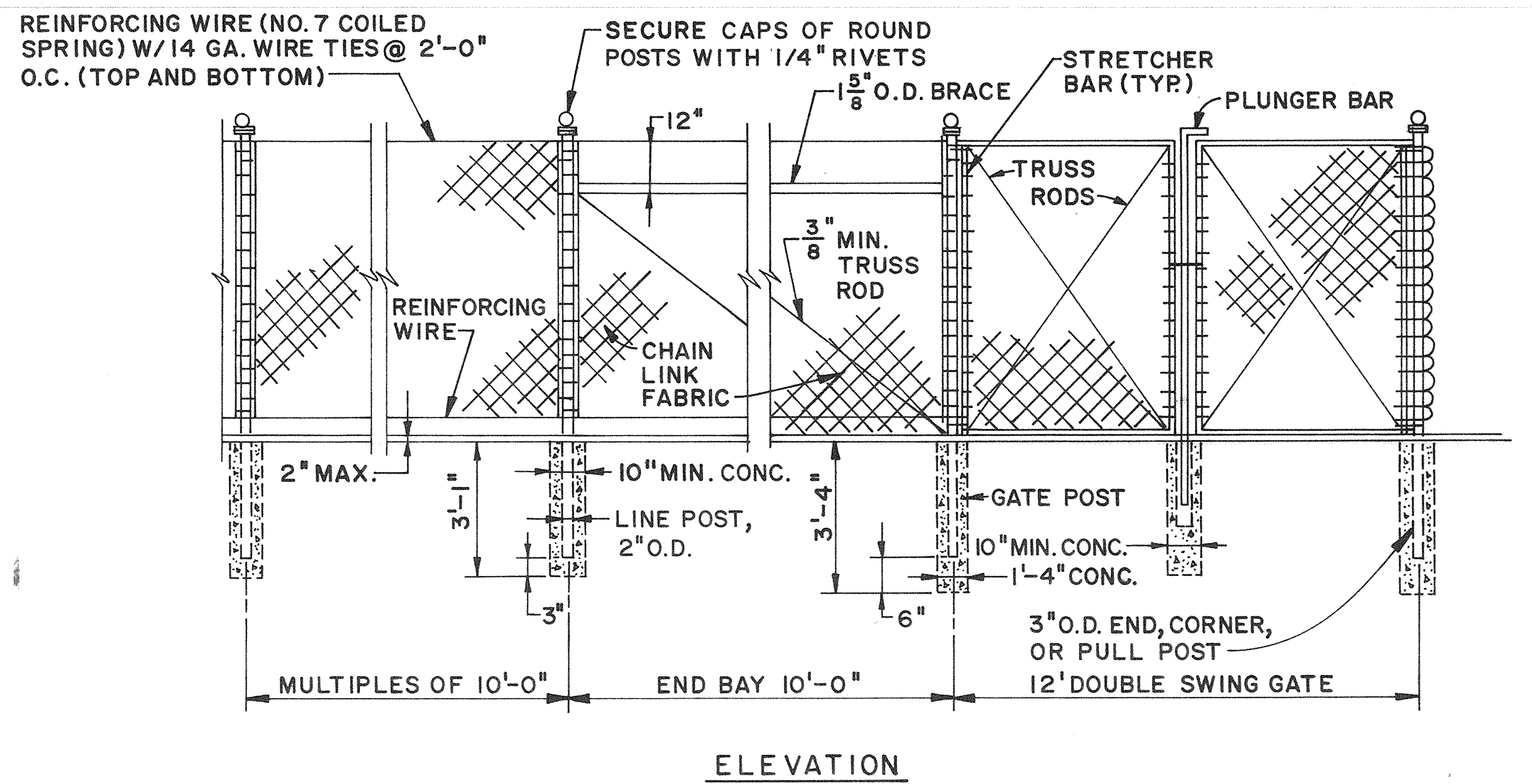
CROSS SECTIONS

SUBMITTED: M. Bo
CHIEF, CIVIL DESIGN SECTION C
DATE APPROVED: JUL 21 1987
SCALE: AS SHOWN
SPEC. No. 7495
SHEET 8
FILE No. PA-18-4-05

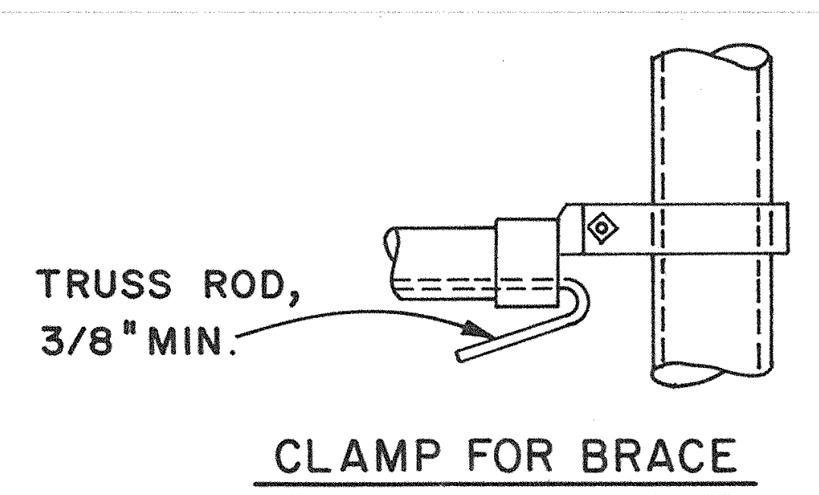
SANTA CLARA_CA Work Maps
SANTA CLARA_CA0231

ENVIRONMENTAL ENHANCEMENT THRU ENGINEERING

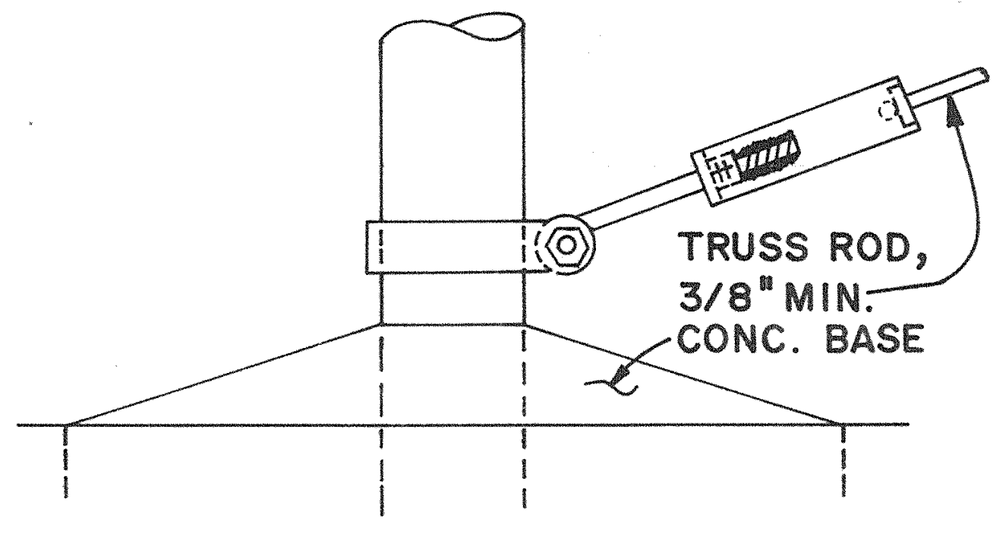
SAFETY PAYS



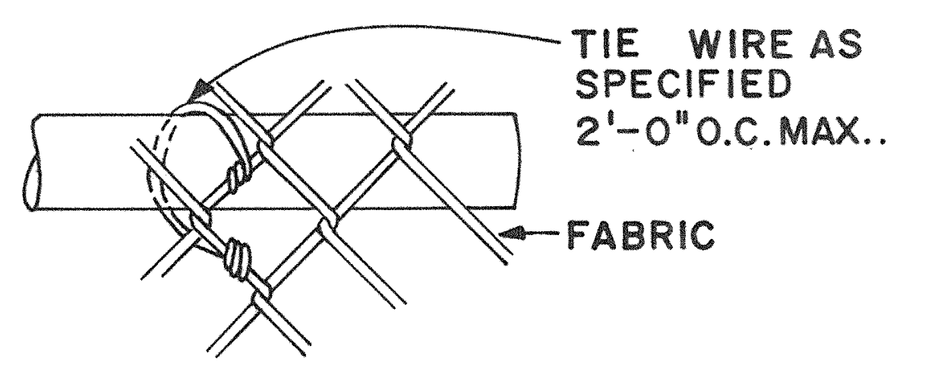
ELEVATION



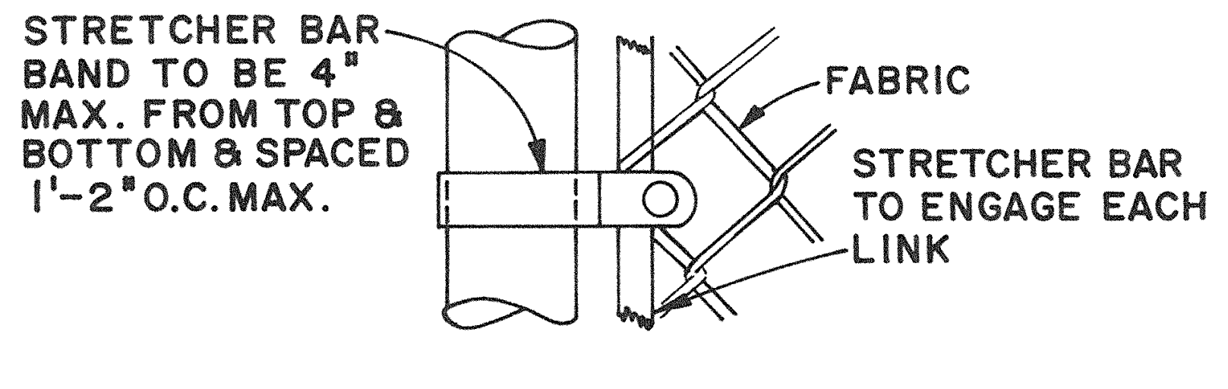
CLAMP FOR BRACE RAIL ROUND POST



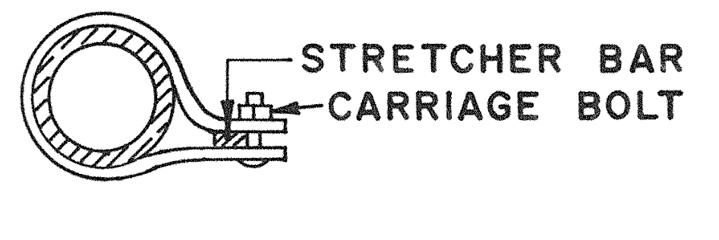
TRUSS ROD AND BAND



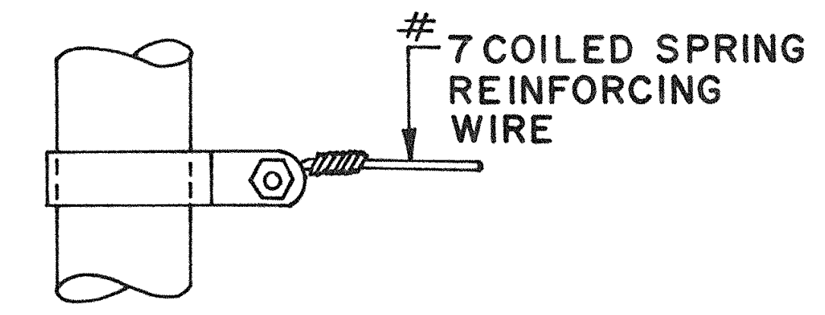
WIRE TIES FOR TOP OR BRACE RAIL


STRETCHER BAR BAND TO BE 4" MAX. FROM TOP & BOTTOM & SPACED 1'-2" O.C. MAX.
FABRIC
STRETCHER BAR TO ENGAGE EACH LINK

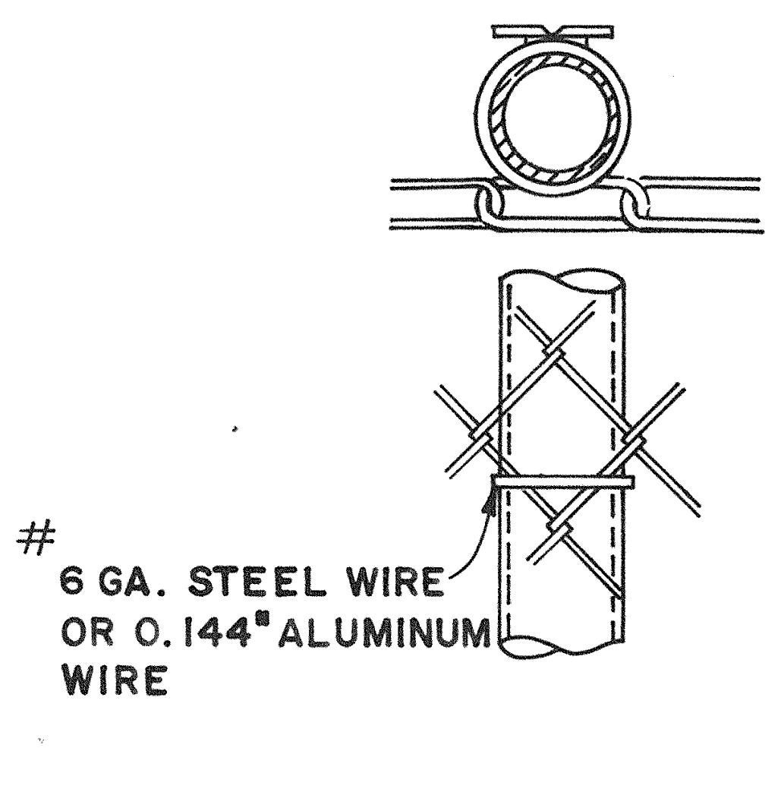
DETAIL - END OR GATE POST



PLAN AT BANDS



BAND FOR WIRE STRETCHING

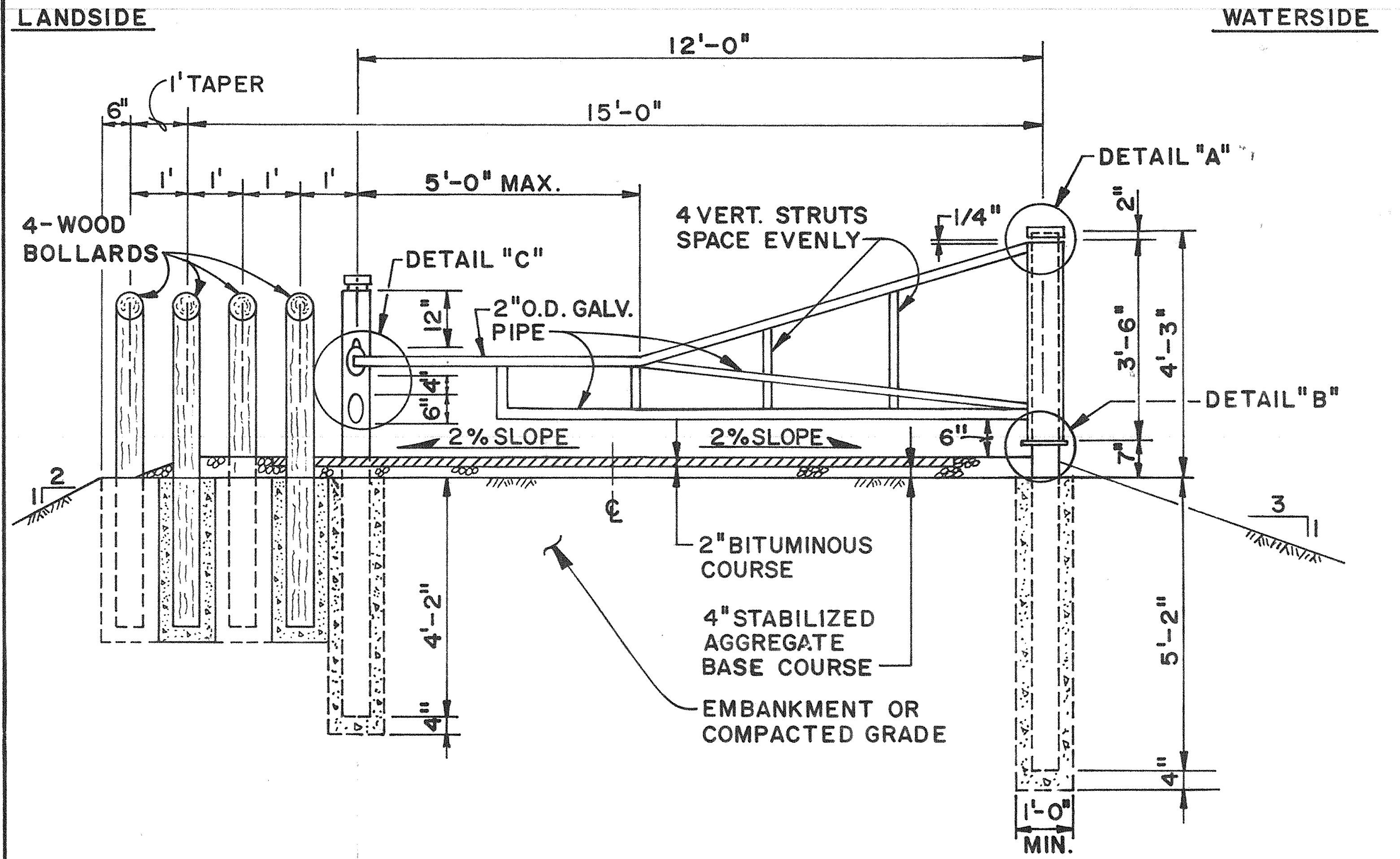


LINE POST ATTACHMENT

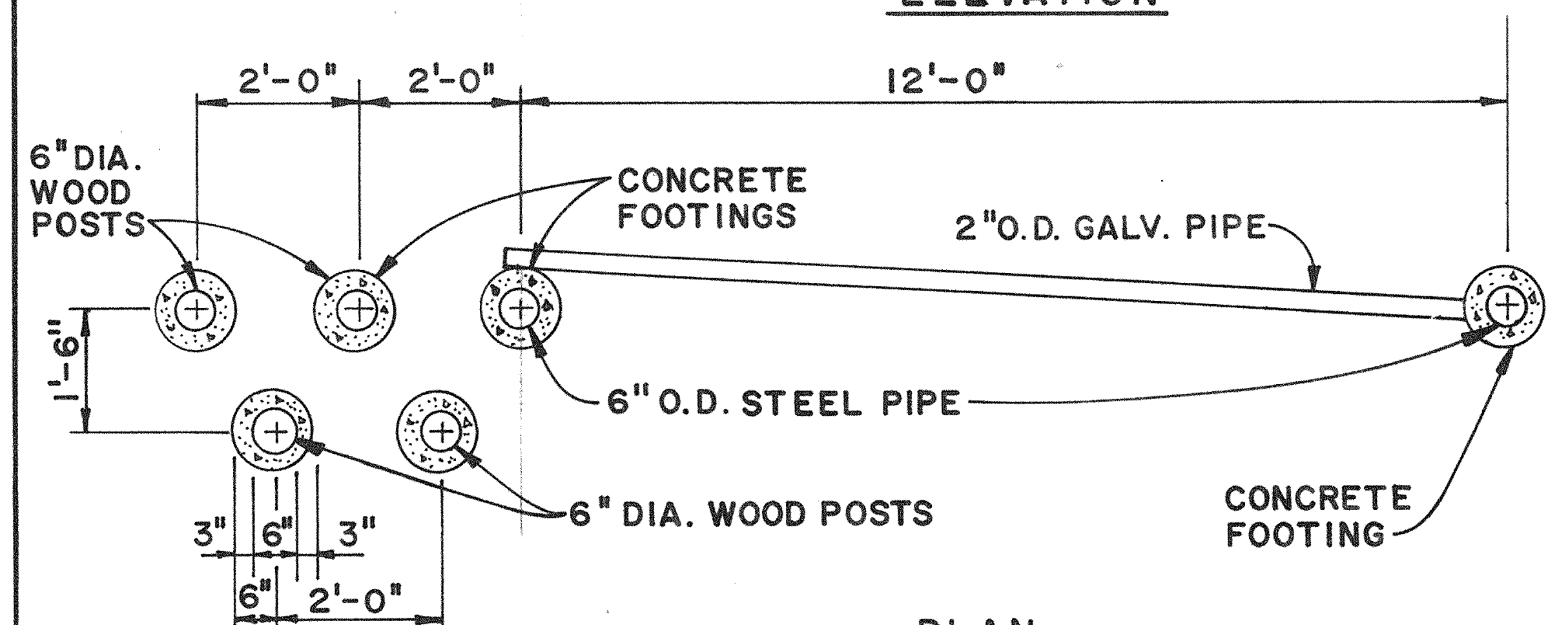
TEMPORARY CHAIN LINK FENCING NOTES:

1. CHAIN LINK FABRIC, GALVANIZED, #9 GAGE WOVEN IN A SPECIFIED MESH FOR PERMANENT FENCE.
2. ALL LINE POSTS TO BE 2 1/2" O.D. STANDARD WEIGHT GALV. STEEL PIPE. LINE POSTS SHALL BE SPACED NOT FURTHER THAN 10 FT. CENTERS. END, CORNER AND PULL POSTS TO BE 3" O.D. STANDARD WEIGHT GALV. STEEL PIPE. GATE POST FOR 12'-0" WIDE DOUBLE GATES OR SMALLER TO BE 3" O.D. STANDARD GALV. STEEL PIPE, FOR LARGER GATE, POSTS SHALL BE 4" O.D..
3. ALL TERMINAL POSTS SHALL BE BRACED WITH 1 5/8" O.D. HORIZONTAL PIPE BRACING, SECURELY ATTACHED TO THE TERMINAL AND FIRST LINE POST WITH MALLEABLE IRON FITTINGS. THEY SHALL BE TRUSS BRACED FROM THE FIRST LINE POST TO THE BOTTOM OF THE TERMINAL POST WITH A 3/8" GALVANIZED TRUSS ROD ASSEMBLY. CORNER POST SHALL BE BRACED IN BOTH DIRECTIONS.
4. POSTS FOR TEMPORARY FENCE MAY BE EARTH-DRIVEN A MINIMUM OF 2 FEET.

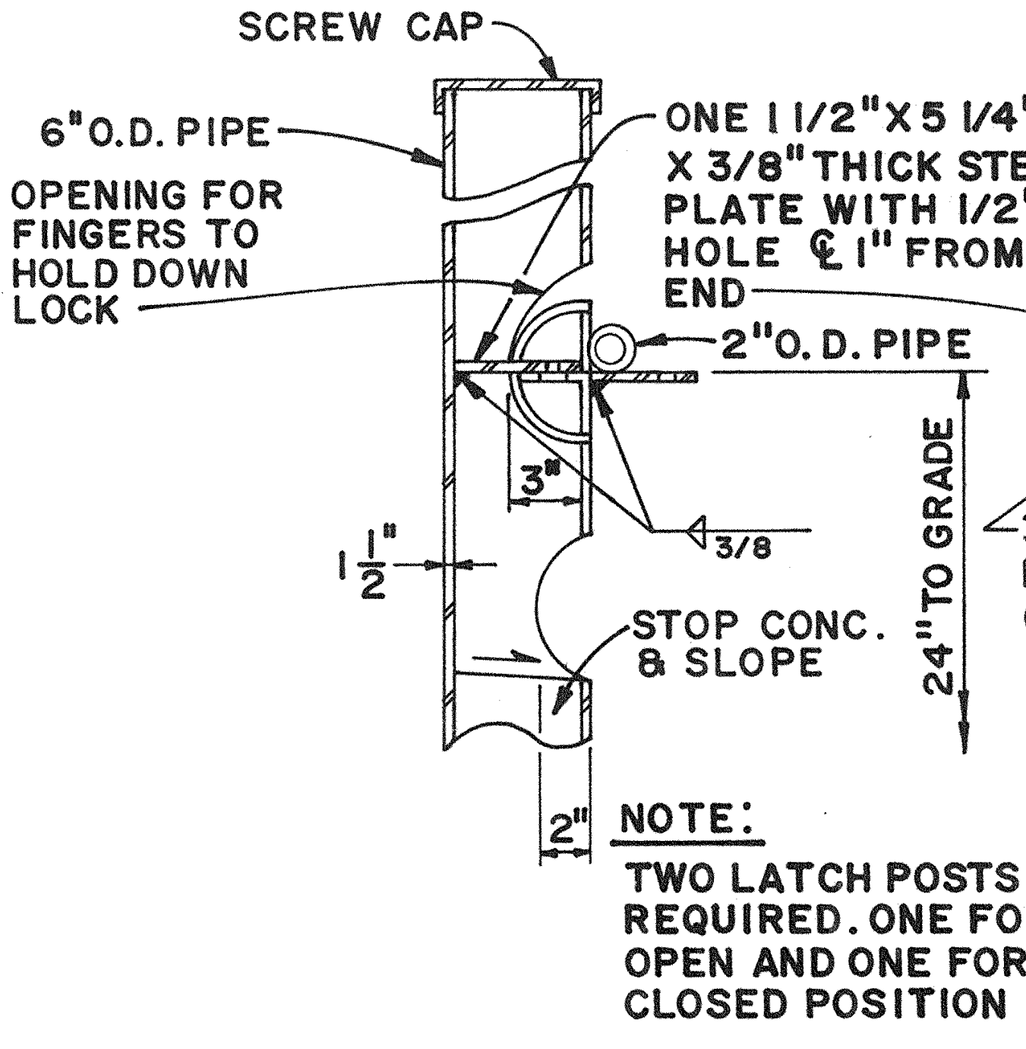
TEMPORARY CHAIN LINK FENCE



ELEVATION

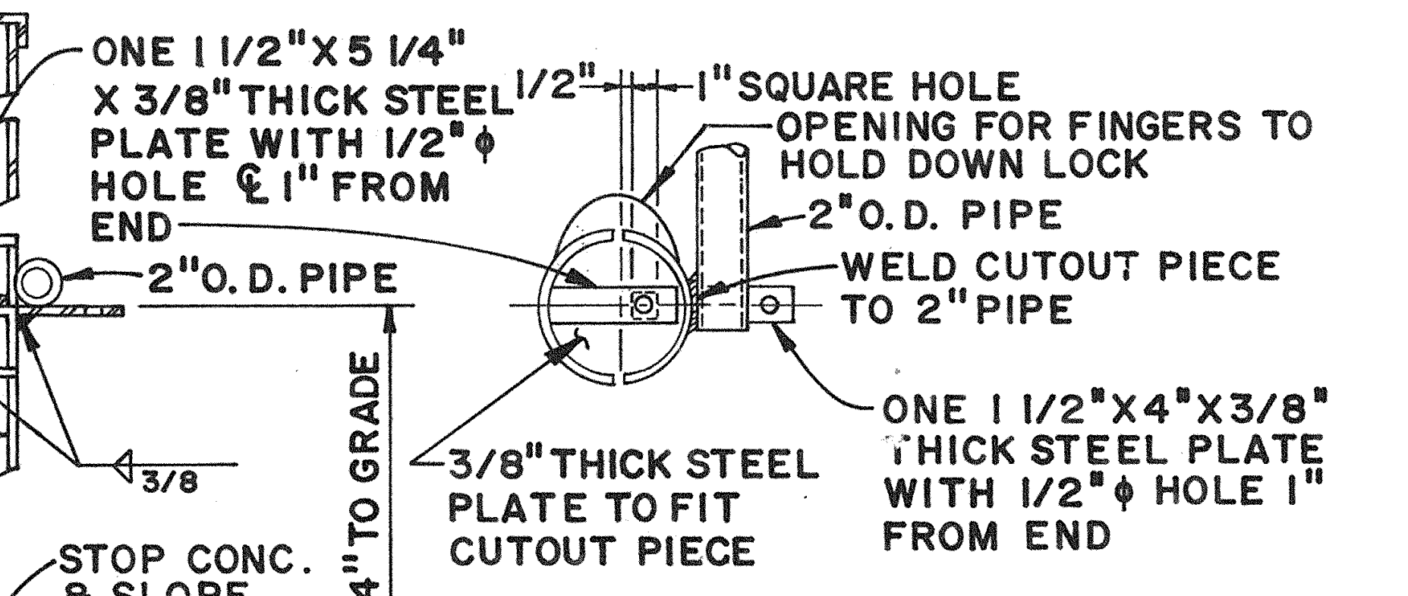


PLAN

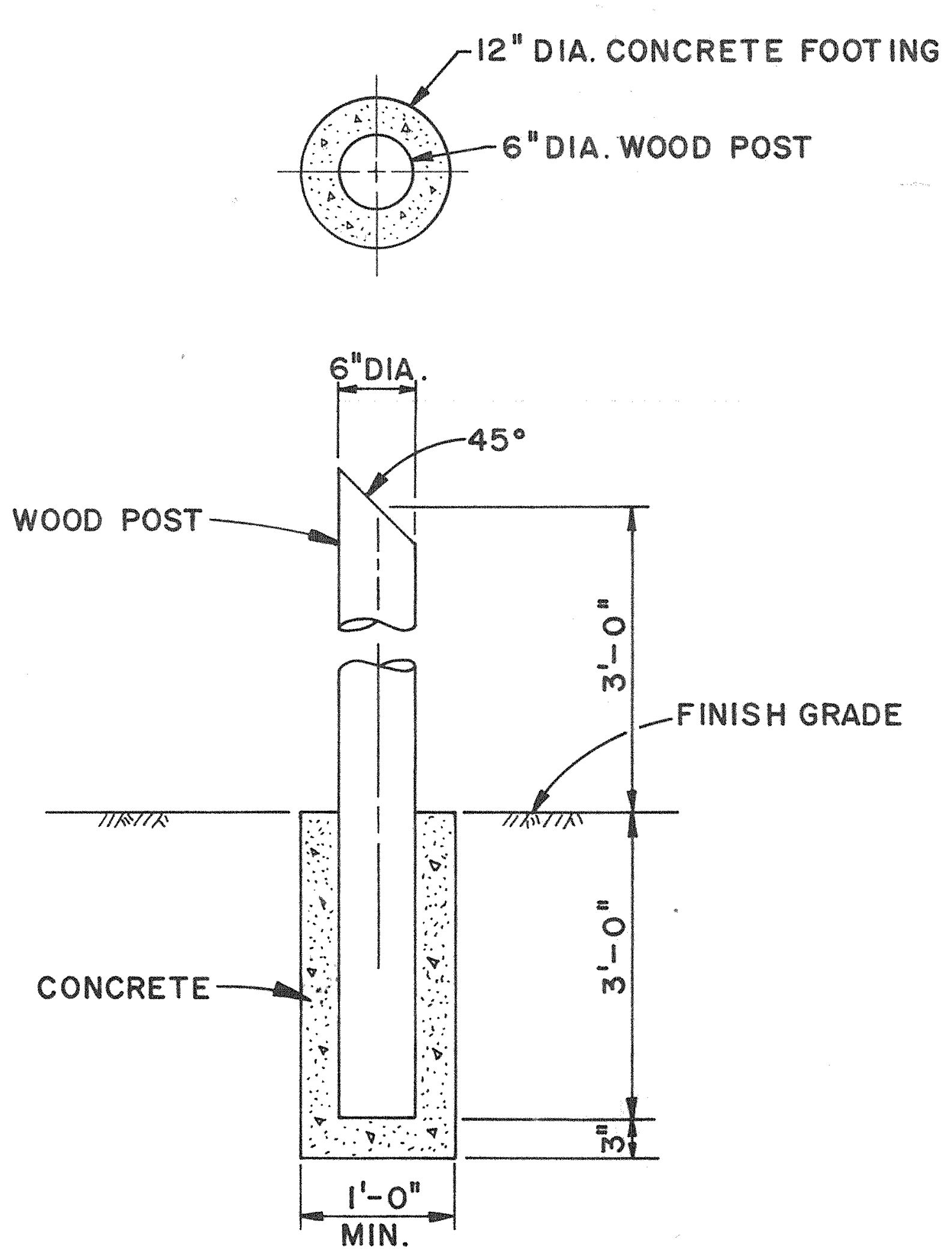


NOTE:
TWO LATCH POSTS REQUIRED. ONE FOR OPEN AND ONE FOR CLOSED POSITION

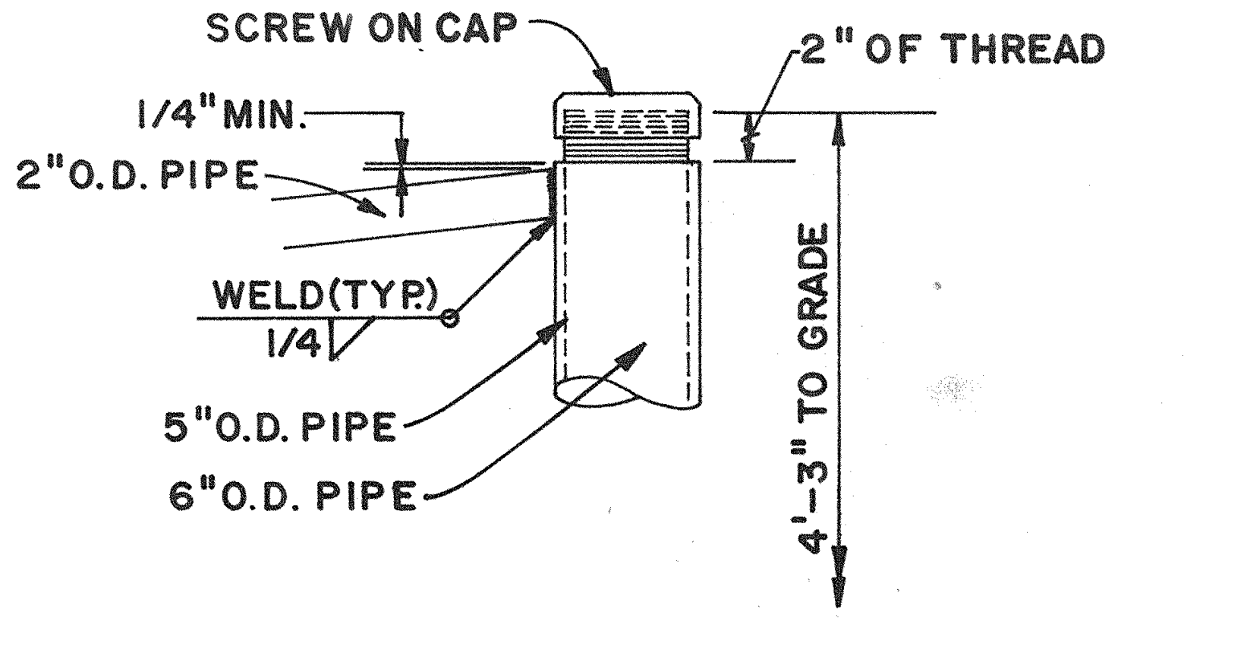
GATE LATCH DETAIL (C)


ONE 1 1/2" X 5 1/4" X 3/8" THICK STEEL PLATE WITH 1/2" φ HOLE ℄ 1" FROM END
1/2"
1" SQUARE HOLE
OPENING FOR FINGERS TO HOLD DOWN LOCK
2" O.D. PIPE
WELD CUTOUT PIECE TO 2" PIPE
3/8" THICK STEEL PLATE TO FIT CUTOUT PIECE
ONE 1 1/2" X 4" X 3/8" THICK STEEL PLATE WITH 1/2" φ HOLE 1" FROM END

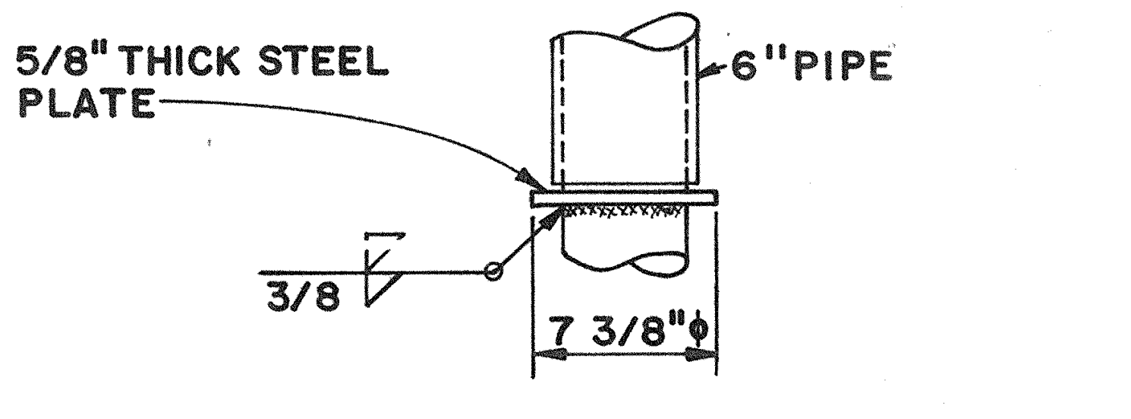
PLAN



BOLLARD DETAIL



CAP SLEEVE HINGE DETAIL (A)

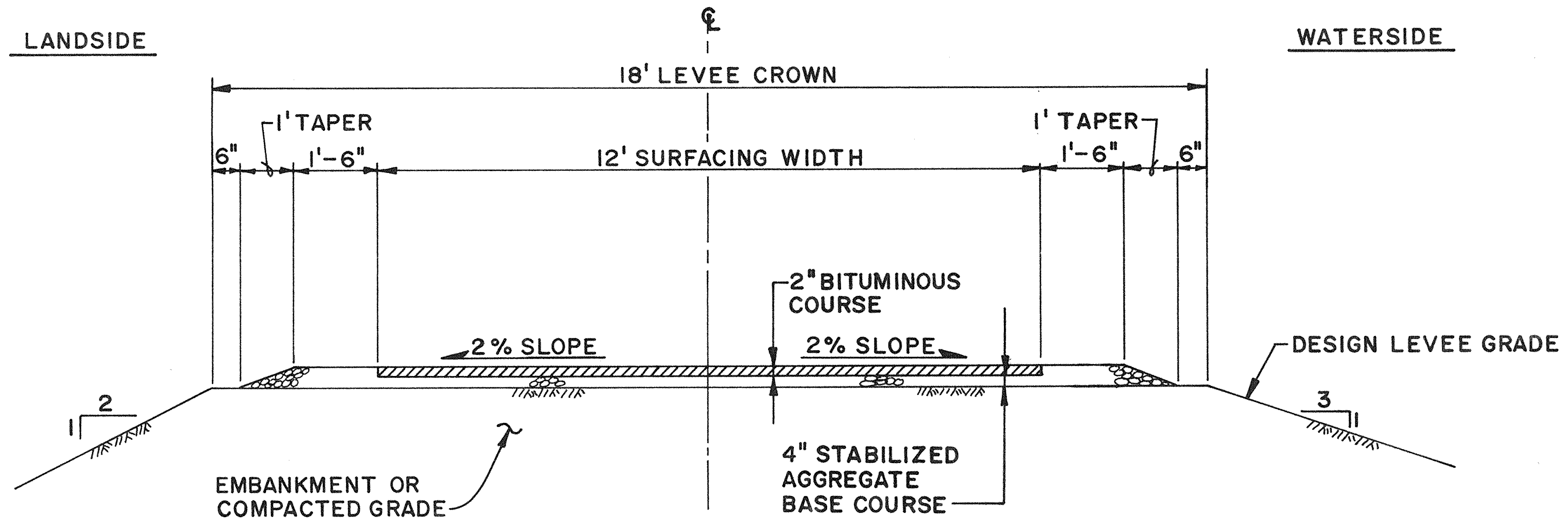


BASE SLEEVE HINGE DETAIL (B)

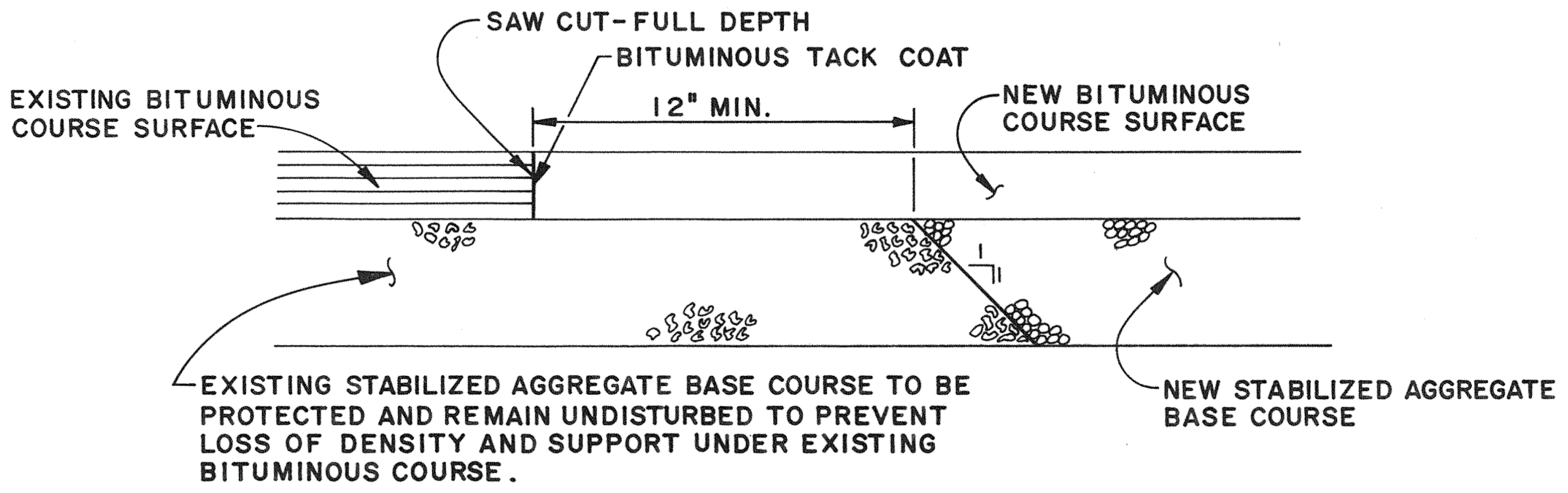
NOTES:

1. PIPES SHALL BE STANDARD WEIGHT GALV. SHOP PRIMED. FINISH PAINTING BY OWNER.
2. FILL ALL STEEL PIPE POSTS WITH CONCRETE.
3. PATCH ALL BASE COURSE AS REQUIRED.
4. TYP. WELD: 1/4" FILLET WELD UNLESS OTHERWISE NOTED.
5. GRIND ALL EDGES SMOOTH AT CUTOUTS IN PIPE AND AT STEEL PLATES.
△6. FOOTING CONCRETE SHALL HAVE A STRENGTH OF 3000 PSI.

LEVEE PIPE GATE AND BOLLARD DETAILS

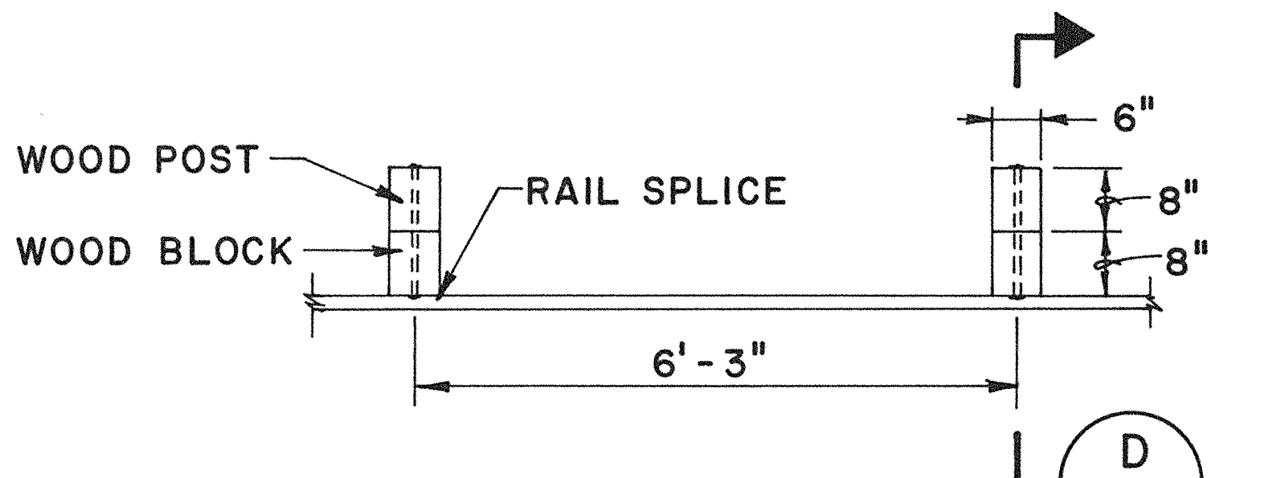


BIKE TRAIL AND PATROL ROAD

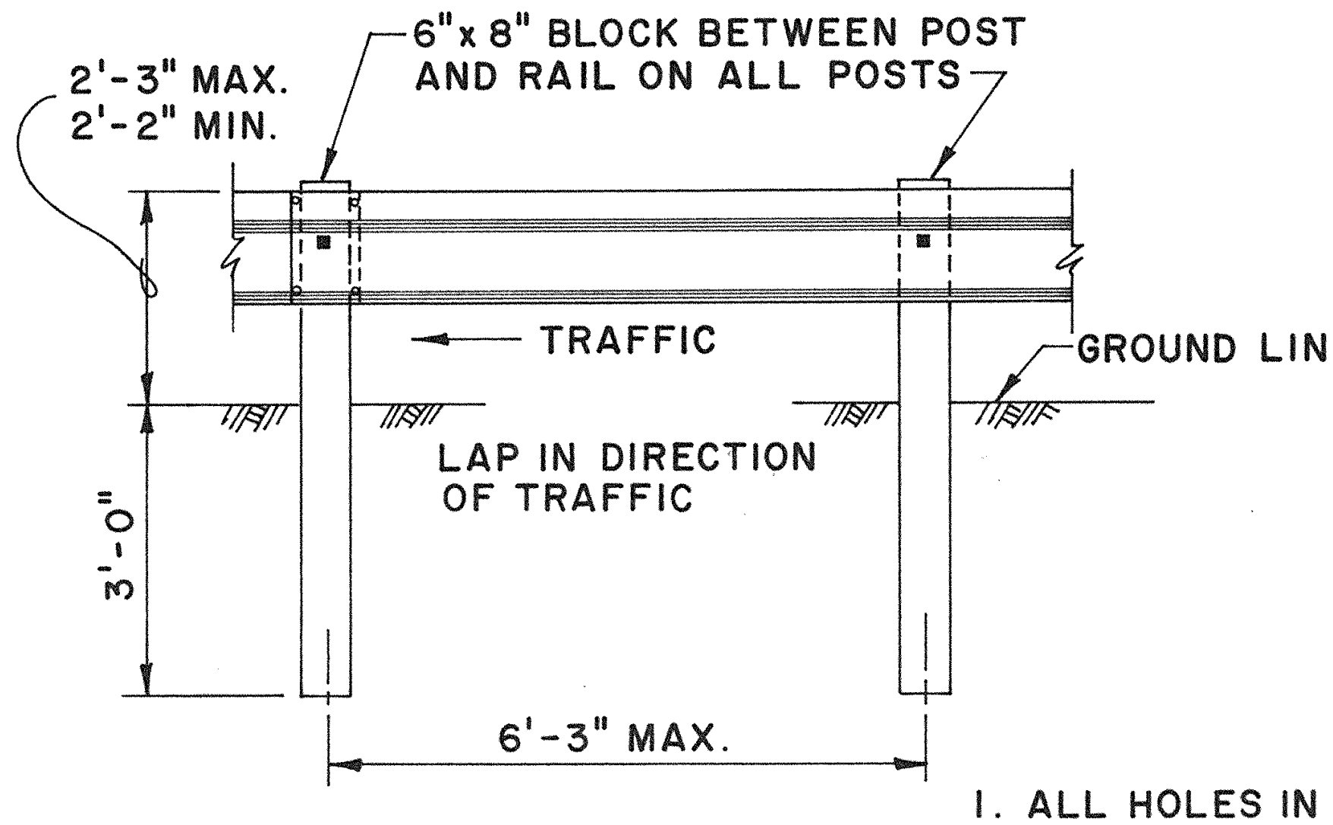

SAW CUT-FULL DEPTH
BITUMINOUS TACK COAT
EXISTING BITUMINOUS COURSE SURFACE
12" MIN.
NEW BITUMINOUS COURSE SURFACE
1
1
NEW STABILIZED AGGREGATE BASE COURSE

EXISTING STABILIZED AGGREGATE BASE COURSE TO BE PROTECTED AND REMAIN UNDISTURBED TO PREVENT LOSS OF DENSITY AND SUPPORT UNDER EXISTING BITUMINOUS COURSE.

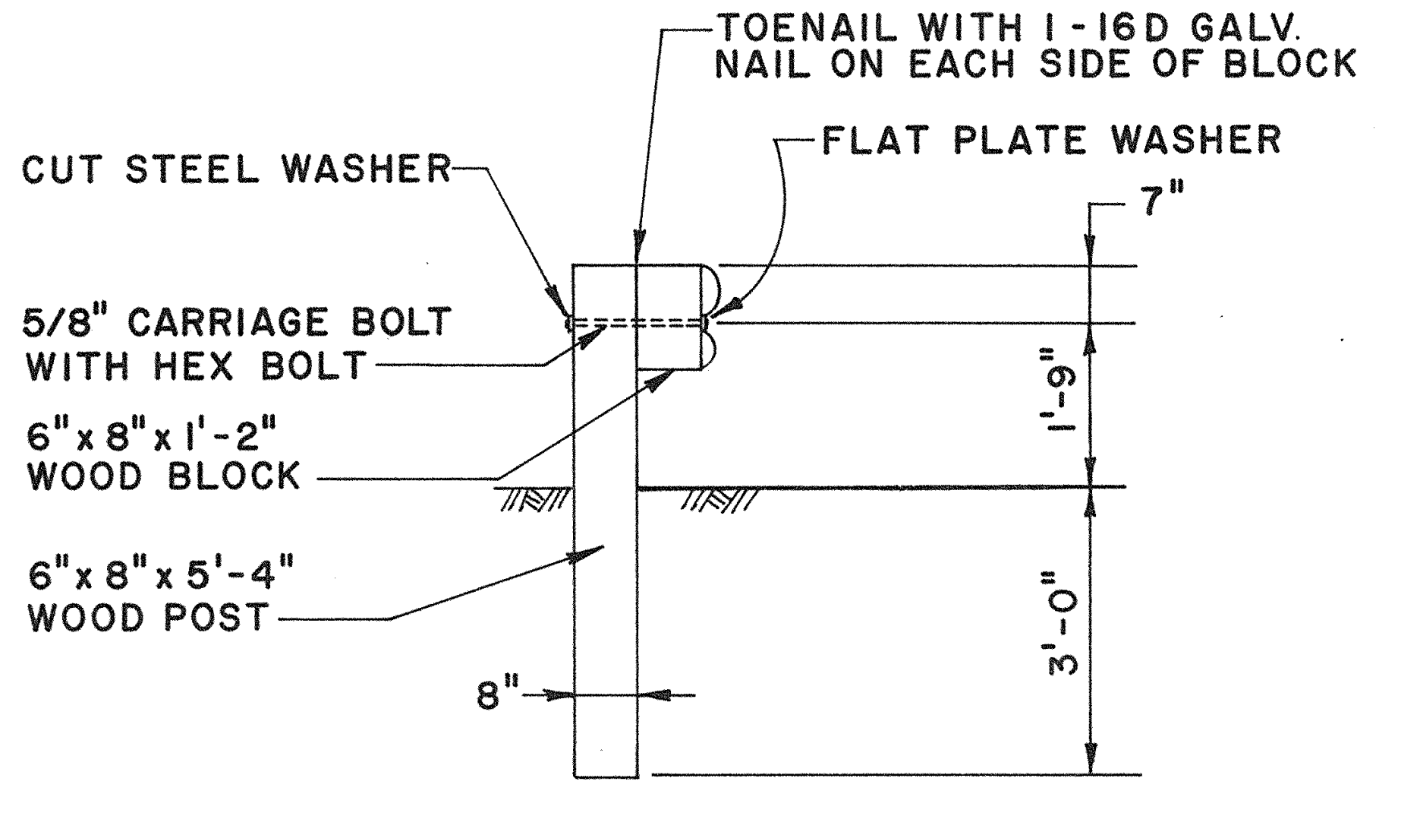
BITUMINOUS COURSE JOINT DETAIL



PLAN


2'-3" MAX.
2'-2" MIN.
6"x8" BLOCK BETWEEN POST AND RAIL ON ALL POSTS
TRAFFIC
GROUND LINE
LAP IN DIRECTION OF TRAFFIC
3'-0"
6'-3" MAX.

ELEVATION



POST SPACING 6'-3" CENTER TO CENTER

SECTION (D)

1. ALL HOLES IN WOOD POSTS AND BLOCKS SHALL BE 3/4" φ ± 1/16"
2. TOTAL GUARDRAIL LENGTH TO BE 16'.

GUARDRAIL DETAILS

SANTA CLARA_CA Work Maps
SANTA CLARA_CA0232

REVISION	DATE	DESCRIPTION	BY	BY
△1	13AUG.87	CHANGED CONCRETE STRENGTH TO 3000 PSI	MJB	JE

DEPARTMENT OF THE ARMY
SACRAMENTO DISTRICT, CORPS OF ENGINEERS
SACRAMENTO, CALIFORNIA

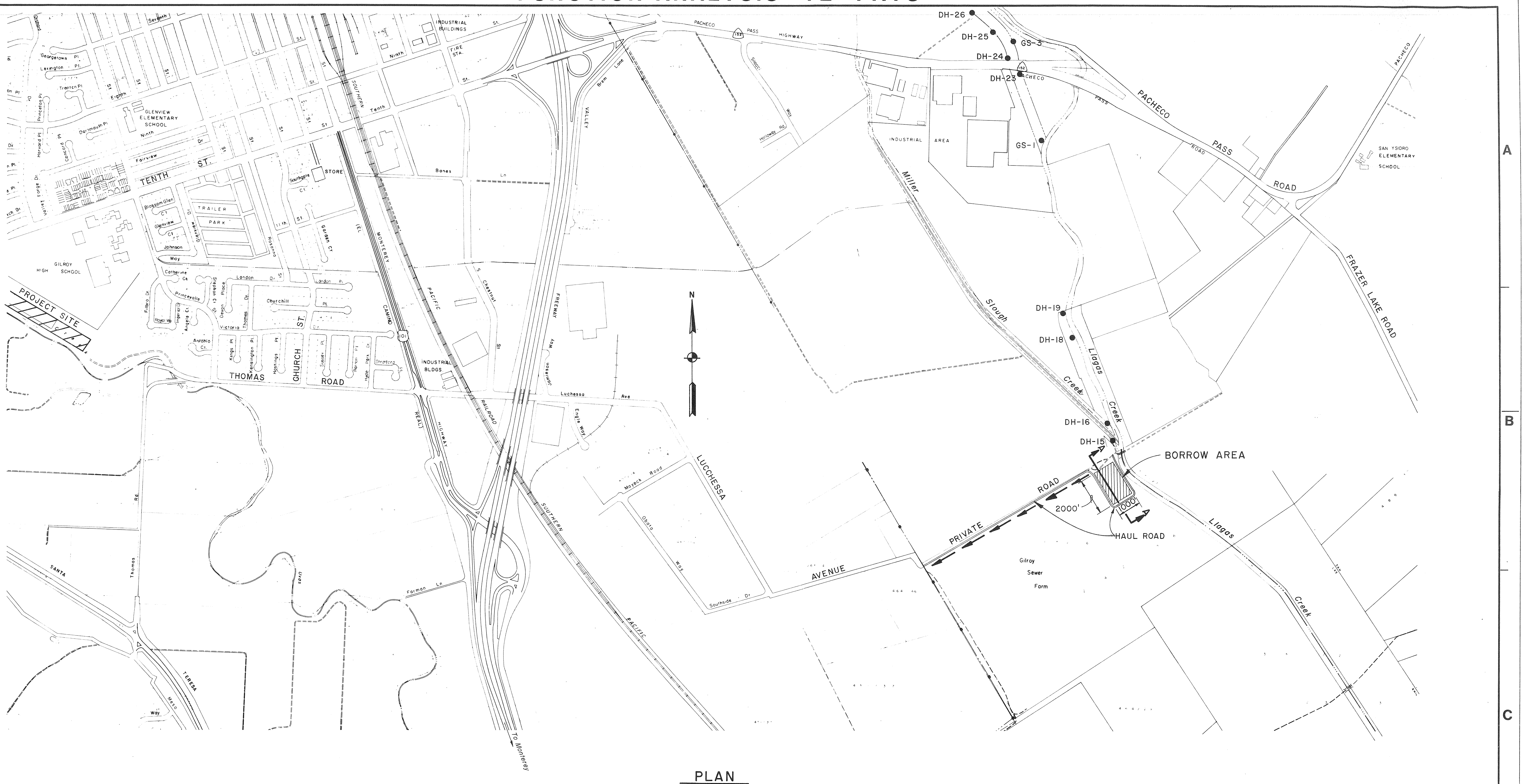
DESIGNED: RYAN/TALUBAN
DRAWN: S. JANG
CHECKED: K. MYERS
SUBMITTED:
CHIEF, CIVIL DESIGN SECTION C

PAJARO RIVER, CALIFORNIA
UVAS CREEK LEVEE AT GILROY
SANTA CLARA COUNTY, CALIFORNIA
LEVEE IMPROVEMENT AND CONSTRUCTION
PHASE I

MISCELLANEOUS DETAILS

DATE APPROVED: JUL 21 1987
SCALE: NO SCALE
SPEC. No. 7495
SHEET: 9
FILE No. PA-18-4-05

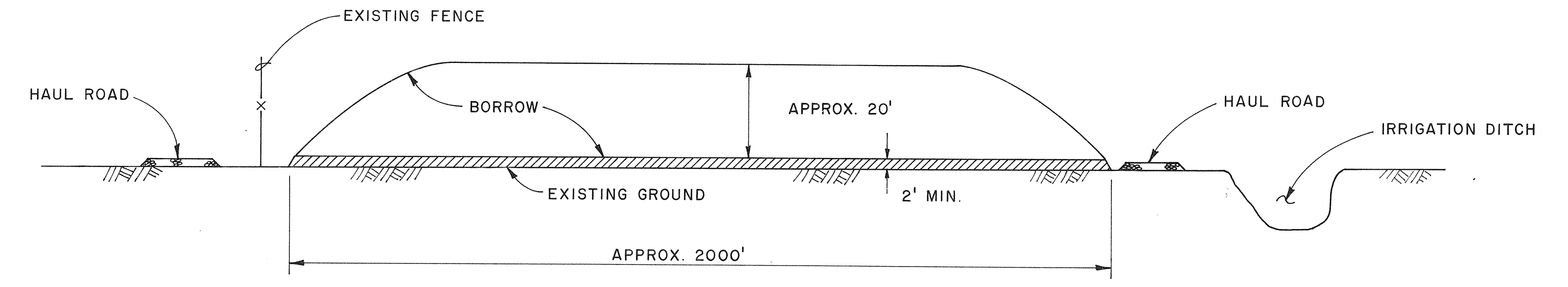
Am-1



PLAN
NOT TO SCALE

NOTES

1. FOR LOGS OF SOIL BORINGS, SEE SHEETS 11, 12, 13.
2. CONTRACTOR TO USE HAUL ROUTE AS INDICATED. HAUL ROUTE ON OTHER ROADS AT CONTRACTOR'S DISCRETION, SUBJECT TO OBTAINING LOCAL PERMITS AS REQUIRED. SEE SPECIFICATION SECTION SC 4.(C).



SECTION (A)
NOT TO SCALE

SANTA CLARA_CA Work Maps
SANTA CLARA_CA0233

REVISION	DATE	DESCRIPTION	BY	BY

DEPARTMENT OF THE ARMY
SACRAMENTO DISTRICT, CORPS OF ENGINEERS
SACRAMENTO, CALIFORNIA

DESIGNED: RYAN/TALUBAN
DRAWN: S. JANG
CHECKED: K. MYERS
SUBMITTED:

PAJARO RIVER, CALIFORNIA
UVAS CREEK LEVEE AT GILROY
SANTA CLARA COUNTY, CALIFORNIA
LEVEE IMPROVEMENT AND CONSTRUCTION
PHASE I

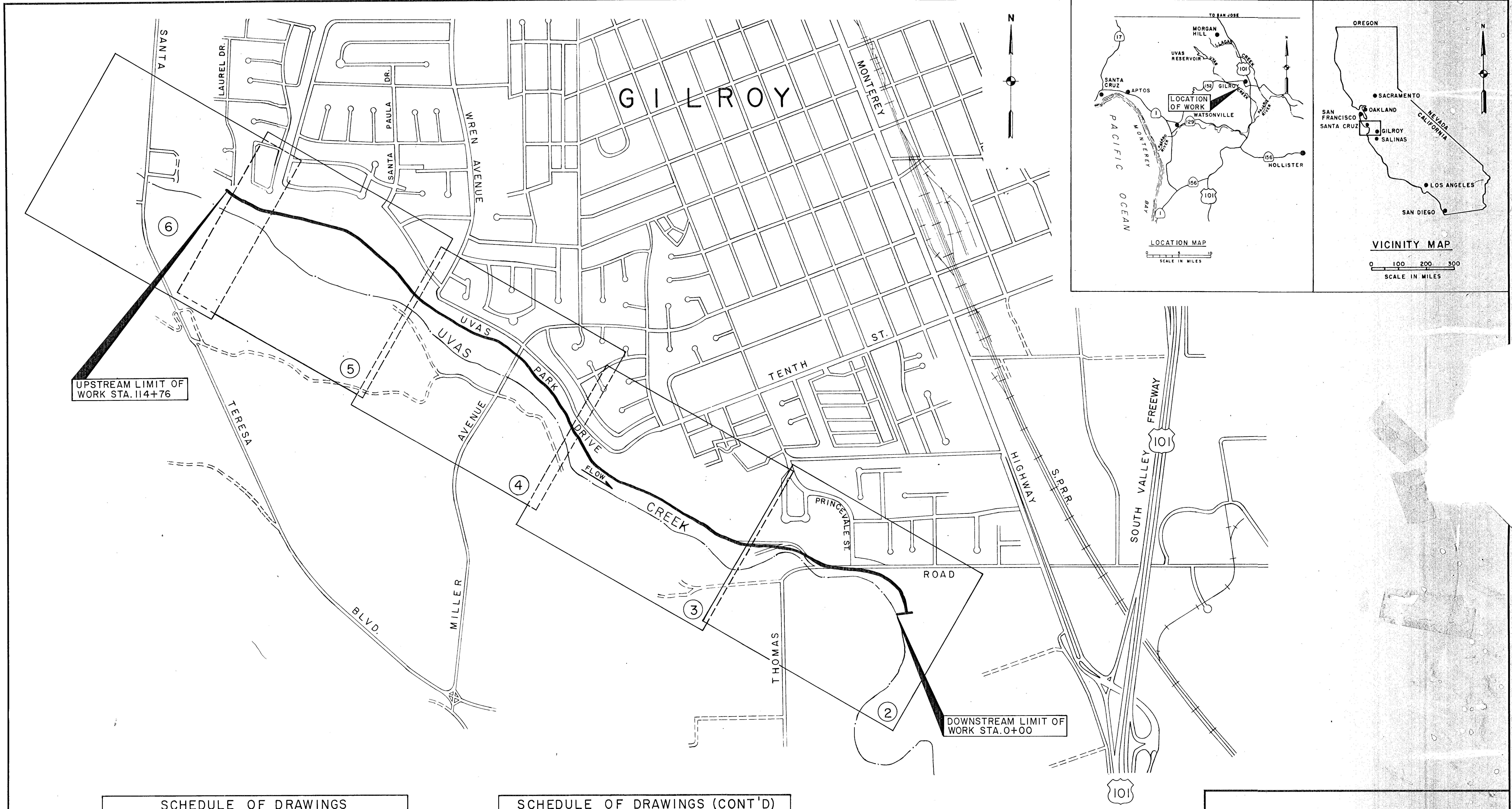
LOCATION OF BORROW AREA AND HAUL ROUTE

DATE APPROVED
SCALE AS SHOWN
SPEC. No. 7495
SHEET 10
FILE No. PA-18-4-05

ENVIRONMENTAL ENHANCEMENT THRU ENGINEERING

FUNCTION ANALYSIS - VE PAYS

ENVIRONMENTAL ENHANCEMENT THRU ENGINEERING



SCHEDULE OF DRAWINGS	
SHEET NO.	DESCRIPTION
1.	VICINITY MAP, LOCATION MAP, GENERAL PLAN, AND SCHEDULE OF DRAWINGS
2.	PLAN – STA. 0+00 TO STA. 30+90
3.	PLAN – STA. 30+90 TO STA. 58+75
4.	PLAN – STA. 58+75 TO STA. 85+80
5.	PLAN – STA. 85+80 TO STA. 109+00
6.	PLAN – STA. 109+00 TO STA. 114+76
7.	PROFILE
8.	TYPICAL SECTIONS-STA. 5+00, STA. 23+30, STA. 38+00
9.	TYPICAL SECTION-STA. 64+00, STA. 85+00
10.	DETAILS-GENERAL
11.	DETAILS-THOMAS ROAD RELOCATION AND WASTE EXCAVATION AREA
12.	DETAILS-MILLER AVENUE RELOCATION
13.	DETAILS-PLANTING PLAN

SCHEDULE OF DRAWINGS (CONT'D)	
SHEET NO.	DESCRIPTION
14.	LOCATION OF BORROW AREA AND HAUL ROUTE
15.	LOGS OF BORINGS-FOUNDATION-2F-7, DH-6A & 2F-8
16.	LOGS OF BORINGS-FOUNDATION-2F-9, 2F-10, 7F-1 & DH-4A
17.	LOGS OF BORINGS-FOUNDATION-7F-2, DH-5A, 2F-11 & 7F-3
18.	LOGS OF BORINGS-FOUNDATION-7F-4, 2F-12, DH-3A & 2F-13
19.	LOGS OF BORINGS-FOUNDATION-2F-14, DH-2A, 2F-15 & 2F-16
20.	LOGS OF BORINGS-FOUNDATION-DH-1A, DH-12, DH-10 & 2F-17
21.	LOCATION OF EXPLORATIONS-BORROW AREA
22.	LOGS OF BORINGS-BORROW AREA-DH-15, DH-16 & DH-18
23.	LOGS OF BORINGS-BORROW AREA-DH-19, DH-23 & DH-24
24.	LOGS OF BORINGS-BORROW AREA-DH-25 & DH-26

GENERAL PLAN

SHEET NO. ③ INDEX TO PLAN SHEETS

GRAPHIC SCALE

1"=500' 0 250' 500' 1000' 1500' 2000'

REVISION	DATE	DESCRIPTION	BY	BY

DEPARTMENT OF THE ARMY
SACRAMENTO DISTRICT, CORPS OF ENGINEERS
SACRAMENTO, CALIFORNIA

DESIGNED: J.K. RYAN
DRAWN: S. JANG
CHECKED: K. MYERS
SUBMITTED:
CHIEF, CIVIL DESIGN SECT. C

PAJARO RIVER, CALIFORNIA
UVAS CREEK LEVEE AT GILROY
SANTA CLARA COUNTY, CALIFORNIA
LEVEE IMPROVEMENT AND CONSTRUCTION
VICINITY MAP, LOCATION MAP,
GENERAL PLAN, AND
SCHEDULE OF DRAWINGS

SIGNATURES AFFIXED BELOW INDICATE OFFICIAL RECOMMENDATION AND APPROVAL OF ALL DRAWINGS IN THIS SET AS INDEXED ON THIS SHEET

APPROVAL RECOMMENDED:
CHIEF, CIVIL DESIGN BRANCH

APPROVED:
CHIEF, ENGINEERING DIVISION

DATE:

PREPARED UNDER THE DIRECTION OF
ARTHUR E. WILLIAMS
COL., CORPS OF ENGINEERS, U. S. A. DISTRICT ENGINEER

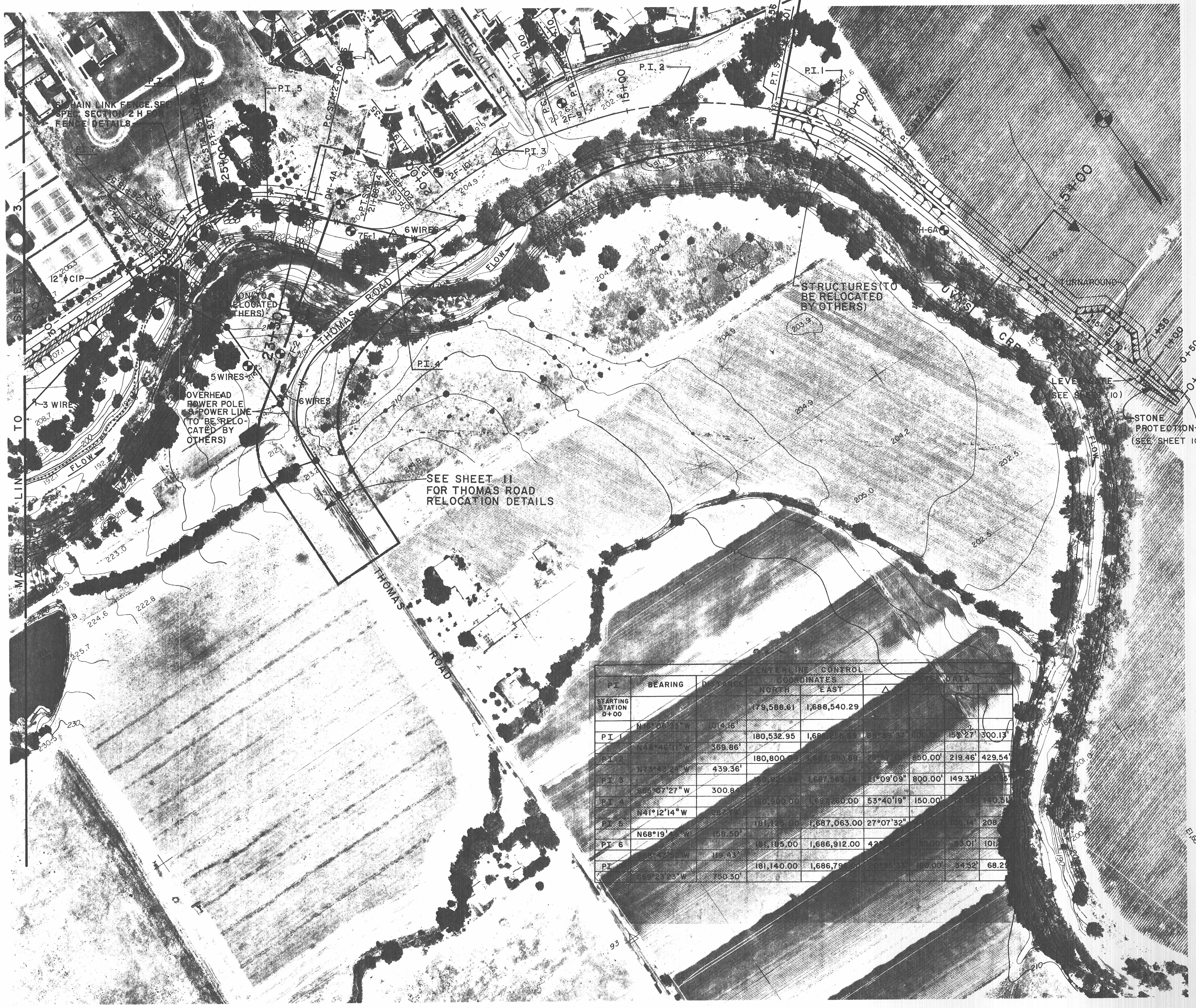
SCALE: AS SHOWN
SPEC. No. 7495
SHEET 1
FILE No. PA-18-4-05

SAFETY PAYS

SANTA CLARA_CA Work Maps
SANTA CLARA_CA0218

FUNCTION ANALYSIS - VE PAYS

CONTROL PT.	NORTHING	EASTING	ELEV.	DESC.
72-A	180,822.688	1,687,679.031	205.02	R.R. SPIKE
93	179,241.900	1,686,794.709	224.43	R.R. SPIKE



PI	BEARING	DISTANCE	CENTERLINE CONTROL COORDINATES NORTH	EAST	CURVE DATA Δ	R	T	L
STARTING STATION 0+00			179,588.61	1,688,540.29				
	N16°06'33"W	1,014.16'						
PI 1			180,532.95	1,688,258.89	28°39'37"	600.00'	153.27'	300.13'
	N44°46'11"W	369.86'						
PI 2			180,800.09	1,687,993.89	28°57'15"	850.00'	219.46'	429.54'
	N73°43'24"W	439.36'						
PI 3			180,923.86	1,687,563.14	21°09'09"	800.00'	149.37'	[illegible]
	S85°07'27"W	300.84'						
PI 4			180,900.00	1,687,260.00	53°40'19"	150.00'	[illegible]	140.51'
	N41°12'14"W	287.79'						
PI 5			181,125.00	1,687,063.00	27°07'32"	[illegible]	106.14'	[illegible]
	N68°19'46"W	158.50'						
PI 6			181,185.00	1,686,912.00	[illegible]	135.00'	53.01'	[illegible]
	S66°47'50"W	119.43'						
PI 7			181,140.00	1,686,796.00	20°35'33"	190.00'	34.52'	[illegible]
	S89°23'23"W	750.30'						

LEGEND

⊥⊥⊥	LEVEE CONSTRUCTION
▨	BIKE TRAIL (SEE DETAIL SHEET 10)
•••••••••	HIKING TRAIL (SEE DETAIL SHEET 10)
▩	STONE PROTECTION (SEE DETAIL SHEET 10)
-X-X-X-	CHAIN LINK FENCE
●—●	OVERHEAD POWER POLE & POWER LINE
◒	LOCATION OF SOILS BORING
----	TEMPORARY CONSTRUCTION RIGHT-OF-WAY
—W—	WATER MAIN

NOTES:

1. ELEVATIONS REFER TO NATIONAL GEODETIC VERTICAL DATUM OF 1929.
2. HORIZONTAL CONTROL IS BASED ON STATE OF CALIFORNIA COORDINATE SYSTEM, ZONE III.
3. DATE OF SURVEY: AUGUST 1963. CORPS OF ENGINEERS FILE NO. PA-18-03.
4. HIKING TRAIL ALIGNMENT TO BE STAKED IN THE FIELD BY CONTRACTOR AND APPROVED BY CONTRACTING OFFICER.
5. LEVEE CROWN ACCESS TO BE PROVIDED AT THOMAS ROAD. ACCESS WILL BE CONTROLLED BY A LEVEE GATE ON THE LEVEE SOUTH OF THOMAS ROAD AND BY BOLLARDS ON THE LEVEE NORTH OF THOMAS ROAD.

GRAPHIC SCALE

0 50' 100' 200' 300' 400' 500'

REVISION	DATE	DESCRIPTION	BY	BY
△				
△				

DEPARTMENT OF THE ARMY
SACRAMENTO DISTRICT, CORPS OF ENGINEERS
SACRAMENTO, CALIFORNIA

DESIGNED: J.K. RYAN
DRAWN: S. JANG
CHECKED: K. MYERS

PAJARO RIVER, CALIFORNIA
UVAS CREEK LEVEE AT GILROY
SANTA CLARA COUNTY, CALIFORNIA
LEVEE IMPROVEMENT AND CONSTRUCTION

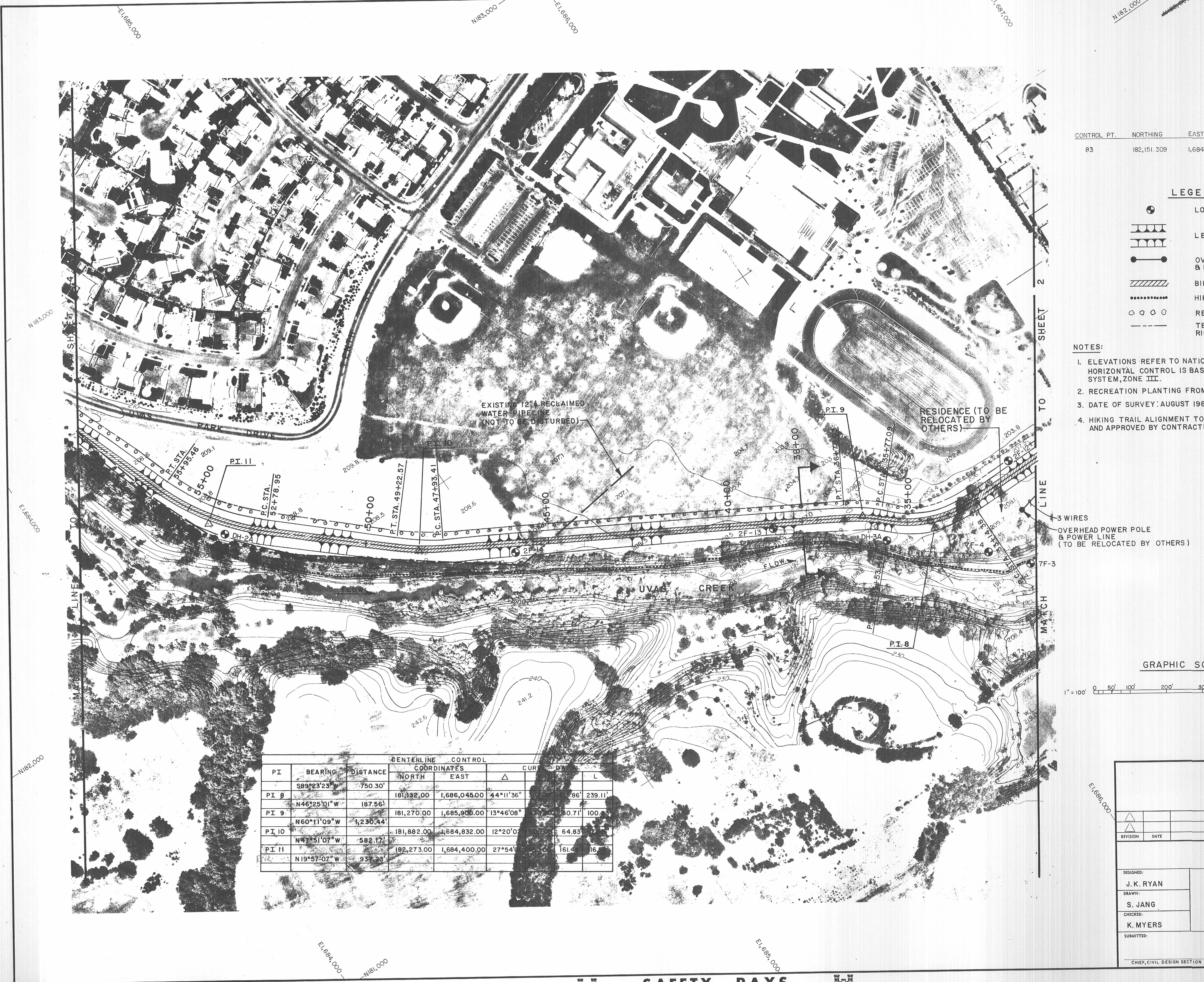
PLAN
STA. 0+00 TO STA. 30+90

SUBMITTED:
CHIEF, CIVIL DESIGN SECTION C
DATE APPROVED:
SCALE: 1" = 100'
SPEC. No. 7495
SHEET 2
FILE No. PA-18-4-05

ENVIRONMENTAL ENHANCEMENT THRU ENGINEERING

SAFETY PAYS

SANTA CLARA_CA Work Maps
SANTA CLARA_CA0219



CONTROL PT.	NORTHING	EASTING	ELEV.	DESC.
83	182,151.309	1,684,443.072	215.40	5/8" REBAR

LEGEND

⊕	LOCATION OF SOILS BORING
⊥⊥⊥⊥	LEVEE CONSTRUCTION
●—●	OVERHEAD POWER POLE & POWER LINE
▨	BIKE TRAIL (SEE DETAIL SHEET 10)
•••••••••	HIKING TRAIL (SEE DETAIL SHEET 10)
○ ○ ○ ○	RECREATION PLANTING (SEE DETAIL SHEET 13)
— — —	TEMPORARY CONSTRUCTION RIGHT-OF-WAY

NOTES:

1. ELEVATIONS REFER TO NATIONAL GEODETIC VERTICAL DATUM OF 1929. HORIZONTAL CONTROL IS BASED ON STATE OF CALIFORNIA COORDINATE SYSTEM, ZONE III.
2. RECREATION PLANTING FROM STATION 60+00 TO STATION 35+00.
3. DATE OF SURVEY: AUGUST 1983. CORPS OF ENGINEERS FILE NO. PA-18-03.
4. HIKING TRAIL ALIGNMENT TO BE STAKED IN THE FIELD BY CONTRACTOR AND APPROVED BY CONTRACTING OFFICER.

GRAPHIC SCALE

1" = 100' 0 50' 100' 200' 300' 400' 500'

CENTERLINE CONTROL

PI	BEARING	DISTANCE	COORDINATES NORTH	COORDINATES EAST	CURVE DATA △	CURVE DATA R	CURVE DATA T	CURVE DATA L
	S89°23'23"W	750.30'						
PI 8			181,132.00	1,686,045.00	44°11'36"	310.00'	125.86'	239.11'
	N46°25'01"W	187.56'						
PI 9			181,270.00	1,685,900.00	13°46'08"	420.00'	50.71'	100.93'
	N60°11'09"W	1,230.44'						
PI 10			181,882.00	1,684,832.00	12°20'02"	600.00'	64.83'	129.16'
	N47°51'07"W	582.17'						
PI 11			182,273.00	1,684,400.00	27°54'00"	650.00'	161.46'	316.52'
	N19°57'07"W	937.23'						

ENVIRONMENTAL ENHANCEMENT THRU ENGINEERING

REVISION	DATE	DESCRIPTION	BY	BY
△				
△				

DEPARTMENT OF THE ARMY
SACRAMENTO DISTRICT, CORPS OF ENGINEERS
SACRAMENTO, CALIFORNIA

DESIGNED: J.K. RYAN
DRAWN: S. JANG
CHECKED: K. MYERS
SUBMITTED:
CHIEF, CIVIL DESIGN SECTION C

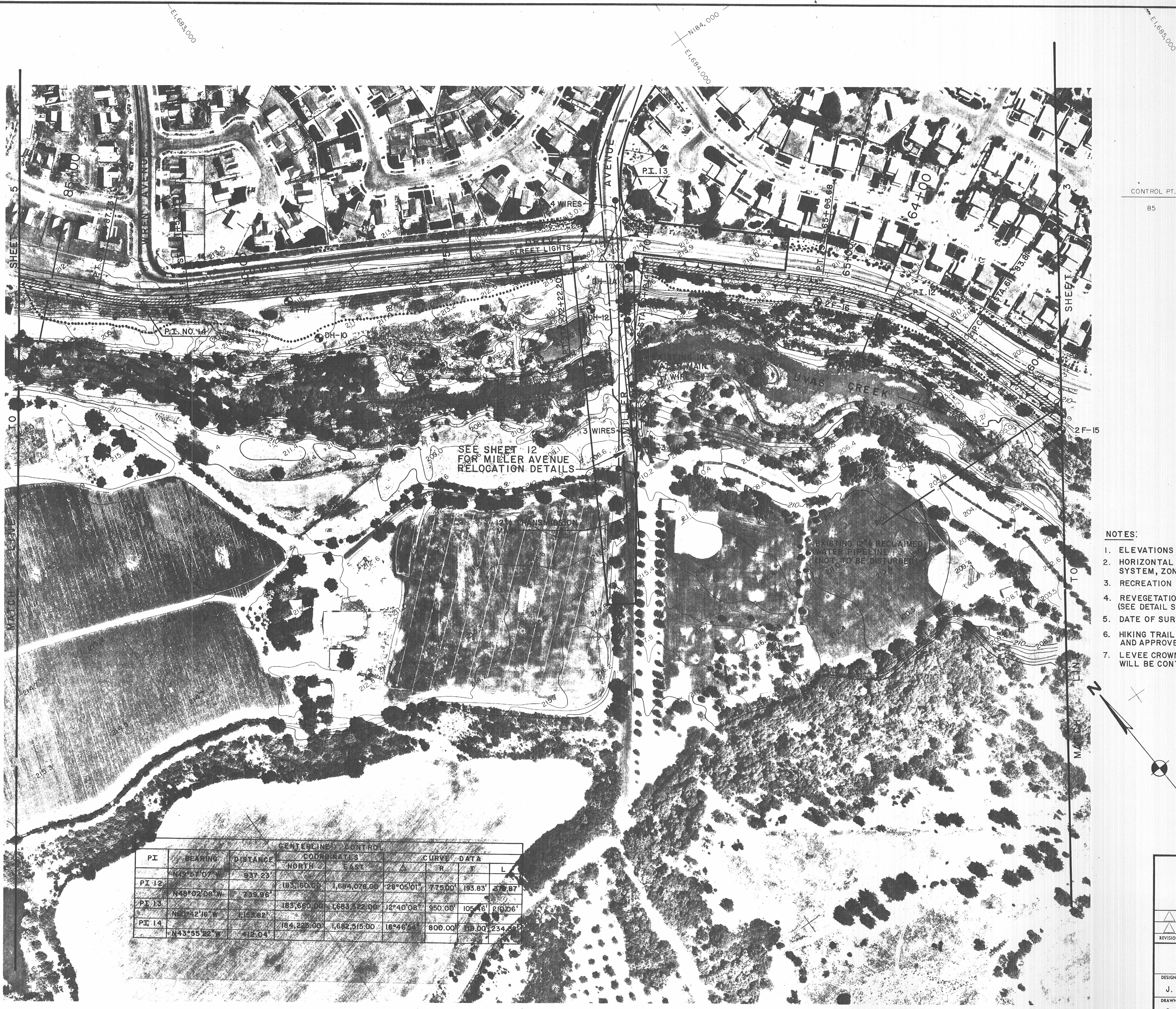
PAJARO RIVER, CALIFORNIA
UVAS CREEK LEVEE AT GILROY
SANTA CLARA COUNTY, CALIFORNIA
LEVEE IMPROVEMENT AND CONSTRUCTION

PLAN

STA. 30+90 TO STA. 58+75

DATE APPROVED:
SCALE: 1" = 100'
SPEC. No. 7495
SHEET 3
FILE No. PA-18-4-05

SANTA CLARA_CA Work Maps
SANTA CLARA_CA0220



CENTERLINE CONTROL

PI	BEARING	DISTANCE	COORDINATES NORTH	COORDINATES EAST	CURVE DATA △	CURVE DATA R	CURVE DATA T	CURVE DATA L
	N19°57'07"W	937.23'						
PI 12			183,160.00	1,684,078.00	28°05'01"	775.00'	193.83'	379.87'
	N48°02'08"W	739.96'						
PI 13			183,660.00	1,683,522.00	12°40'08"	950.00'	105.46'	210.06'
	N60°42'16"W	1,153.82'						
PI 14			184,225.00	1,682,515.00	16°46'54"	800.00'	118.00'	234.32'
	N43°55'22"W	412.04'						

CONTROL PT.	NORTHING	EASTING	ELEV.	DESC.
85	183,675.669	1,683,532.209	216.72	R.R. SPIKE

LEGEND

◐	LOCATION OF SOILS BORING
⊥⊥⊥	LEVEE CONSTRUCTION
●—●	OVERHEAD POWER POLE & POWER LINE
▲	STREET LIGHT
▨	BIKE TRAIL (SEE DETAIL SHEET 10)
••••••	HIKING TRAIL (SEE DETAIL SHEET 10)
○ ○ ○	RECREATION PLANTING (SEE DETAIL SHEET 13)
— — —	TEMPORARY CONSTRUCTION RIGHT-OF-WAY

NOTES:

1. ELEVATIONS REFER TO NATIONAL GEODETIC VERTICAL DATUM OF 1929.
2. HORIZONTAL CONTROL IS BASED ON STATE OF CALIFORNIA COORDINATE SYSTEM, ZONE III.
3. RECREATION PLANTING FROM STATION 60+00 TO STA. 35+00.
4. REVEGETATION PLANTING FROM STATION 86+00 TO STA. 59+00 (SEE DETAIL SHEET 13).
5. DATE OF SURVEY: AUGUST 1983. CORPS OF ENGINEERS FILE NO. PA-18-03.
6. HIKING TRAIL ALIGNMENT TO BE STAKED IN THE FIELD BY CONTRACTOR AND APPROVED BY CONTRACTING OFFICER.
7. LEVEE CROWN ACCESS WILL BE PROVIDED AT MILLER AVENUE. ACCESS WILL BE CONTROLLED BY BOLLARDS.

GRAPHIC SCALE

1"=100' 0 50' 100' 200' 300' 400' 500'

ENVIRONMENTAL ENHANCEMENT THRU ENGINEERING

REVISION	DATE	DESCRIPTION	BY	BY
△				
△				

DEPARTMENT OF THE ARMY
SACRAMENTO DISTRICT, CORPS OF ENGINEERS
SACRAMENTO, CALIFORNIA

DESIGNED: J. K. RYAN
DRAWN: S. JANG
CHECKED: K. MYERS
SUBMITTED:
CHIEF, CIVIL DESIGN SECTION C
DATE APPROVED:

PAJARO RIVER, CALIFORNIA
UVAS CREEK LEVEE AT GILROY
SANTA CLARA COUNTY, CALIFORNIA
LEVEE IMPROVEMENT AND CONSTRUCTION

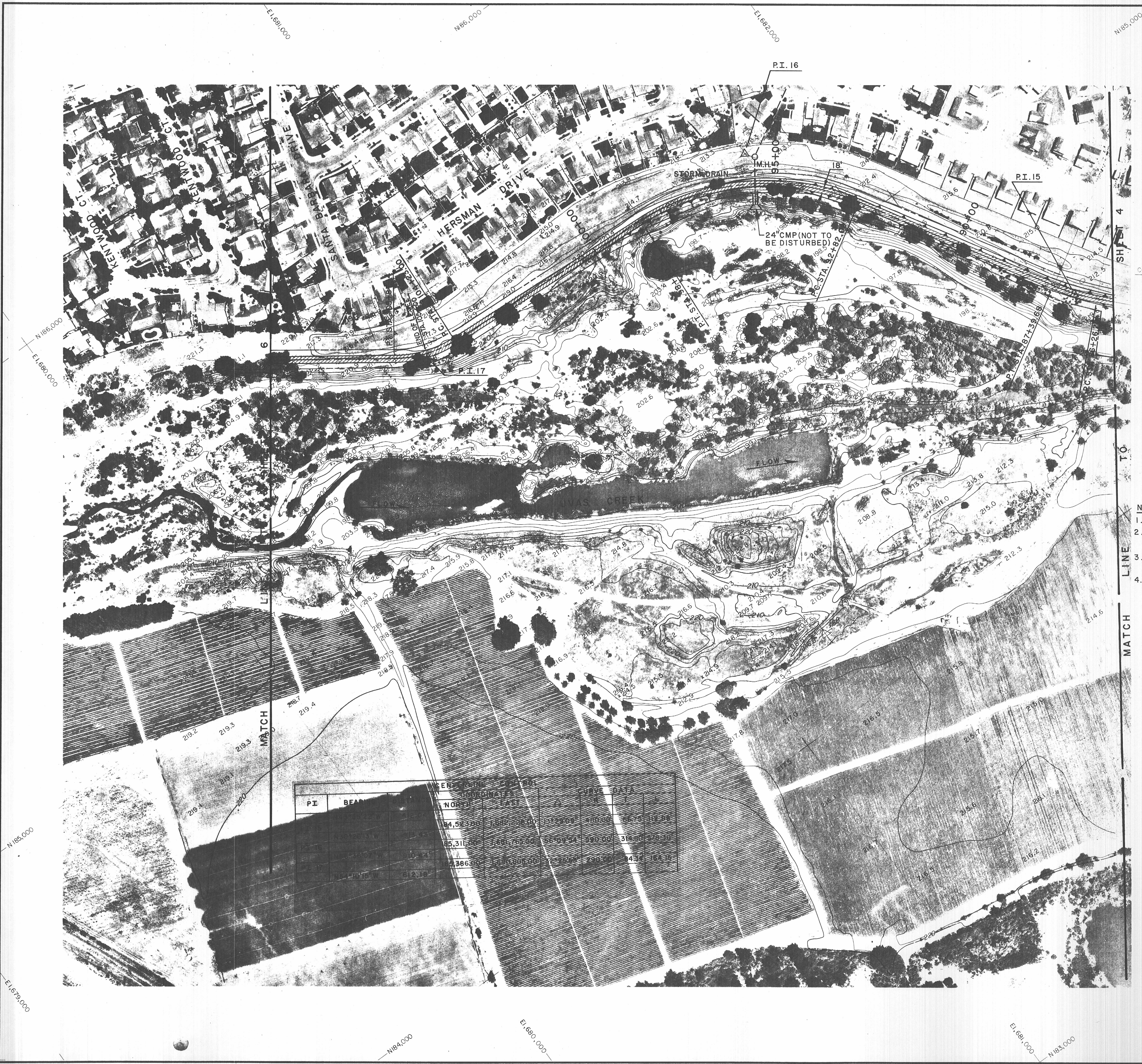
PLAN

STA. 58+75 TO STA. 85+80

SCALE: 1" = 100'
SPEC. No. 7495
SHEET 4
FILE No. PA-18-4-05

SANTA CLARA_CA Work Maps
SANTA CLARA_CA0221

FUNCTION ANALYSIS - VE PAYS



PI	BEARING	DISTANCE	CENTERLINE CONTROL COORDINATES NORTH	EAST	CURVE DATA Δ	R	T	L
	[illegible]	[illegible]						
PI 15			184,523.00	1,682,228.00	13°29'09"	480.00'	56.75'	112.98'
	N30°26'13"W	913.43'						
PI 16			185,311.00	1,681,765.00	56°09'54"	590.00'	314.80'	578.36'
	N85°36'07"W	[illegible]						
PI 17			185,386.00	1,680,805.00	32°25'58"	290.00'	84.34'	164.15'
	N54°10'15"W	612.18'						

ENVIRONMENTAL ENHANCEMENT THRU ENGINEERING

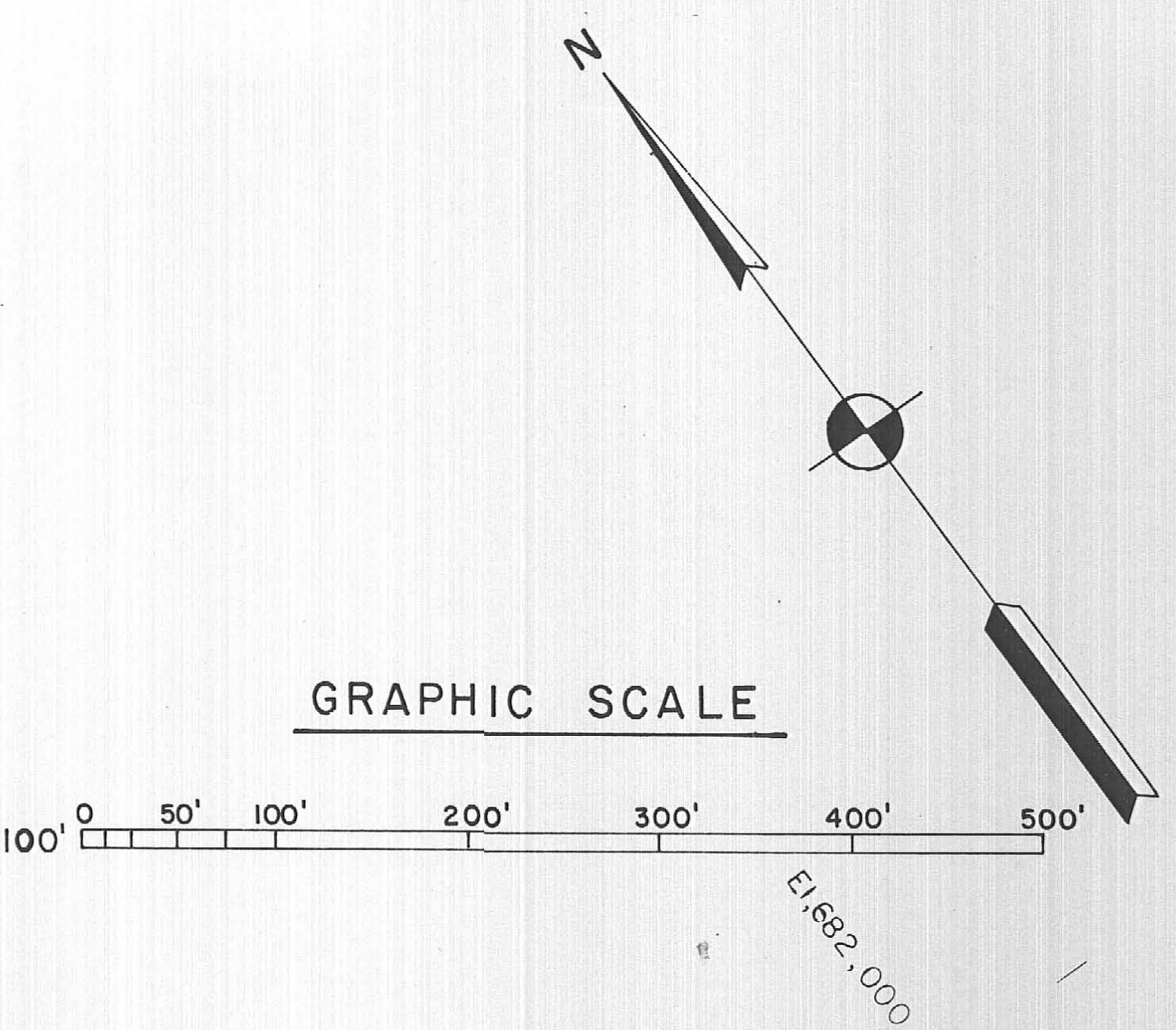
CONTROL PT.	NORTHING	EASTING	ELEV.	DESC.
86	184,571.848	1,682,198.828	219.38	R.R. SPIKE
87	185,081.810	1,681,901.954	219.77	R.R. SPIKE
88	184,204.579	1,681,206.405	215.85	5/8" REBAR

LEGEND

— - — - —	TEMPORARY CONSTRUCTION RIGHT-OF-WAY
┴┴┴┴	LEVEE CONSTRUCTION
○	MANHOLE
▨	BIKE TRAIL (SEE DETAIL SHEET 10)

NOTES:

1. ELEVATIONS REFER TO NATIONAL GEODETIC VERTICAL DATUM OF 1929.
2. HORIZONTAL CONTROL IS BASED ON STATE OF CALIFORNIA COORDINATE SYSTEM, ZONE III.
3. REVEGETATION PLANTING FROM STATION 86+00 TO STATION 59+00 AND STATION 114+00 TO STATION 108+00 (SEE DETAIL SHEET 13).
4. DATE OF SURVEY: AUGUST 1983. CORPS OF ENGINEERS FILE NO. PA-18-03.



REVISION	DATE	DESCRIPTION	BY	BY
△				
△				

DEPARTMENT OF THE ARMY
SACRAMENTO DISTRICT, CORPS OF ENGINEERS
SACRAMENTO, CALIFORNIA

DESIGNED: J. K. RYAN
DRAWN: S. JANG
CHECKED: K. MYERS

PAJARO RIVER, CALIFORNIA
UVAS CREEK LEVEE AT GILROY
SANTA CLARA COUNTY, CALIFORNIA
LEVEE IMPROVEMENT AND CONSTRUCTION

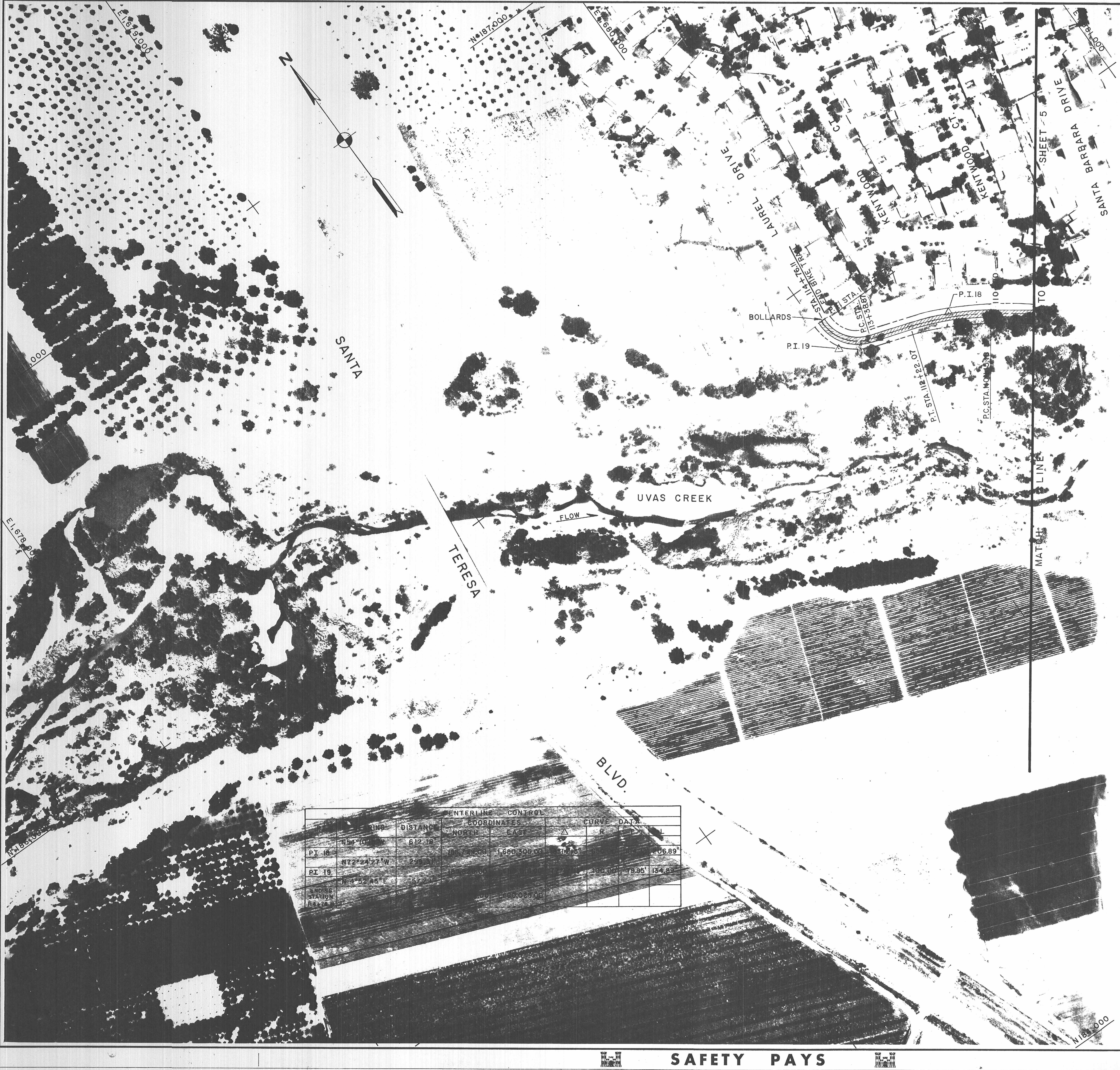
PLAN
STA. 85+80 TO STA. 109+00

SUBMITTED:
CHIEF, CIVIL DESIGN SECTION C
DATE APPROVED:
SCALE: 1" = 100'
SPEC. No. 7495
SHEET 5
FILE No. PA-18-4-05

SAFETY PAYS

SANTA CLARA_CA Work Maps
SANTA CLARA_CA0222

SANTA CLARA_CA0223
SANTA CLARA CA Work Maps



CENTERLINE CONTROL								
PI	BEARING	DISTANCE	COORDINATES		CURVE DATA			
			NORTH	EAST	Δ	R	T	L
	N54°10'[illegible]"W	612.18'						
PI 18			[illegible],723.00	1,680,305.00	[illegible]°14'15"	[illegible]	[illegible]	206.89'
	N72°24'27"W	29[illegible]'						
PI 19			[illegible],820.00	[illegible]	77°[illegible]	100.00'	79.95'	134.89'
	N 4°52'45"E	57.29'						
ENDING STATION 114+76.11			[illegible]	1,680,025.00				

LEGEND

▨	BIKE TRAIL (SEE DETAIL SHEET 10)
— - - —	TEMPORARY CONSTRUCTION RIGHT-OF-WAY

E1,681,000

N184,000

E1,680,000

N183,000

NOTES:

1. ELEVATIONS REFER TO NATIONAL GEODETIC VERTICAL DATUM OF 1929
2. HORIZONTAL CONTROL IS BASED ON STATE OF CALIFORNIA COORDINATE SYSTEM, ZONE III.
3. DATE OF SURVEY: AUGUST 1983. CORPS OF ENGINEERS FILE NO. PA-18-03.

GRAPHIC SCALE

1"=100' 0 50' 100' 200' 300' 400' 500'

REVISION	DATE	DESCRIPTION	BY	BY
△				
△				

DEPARTMENT OF THE ARMY
SACRAMENTO DISTRICT, CORPS OF ENGINEERS
SACRAMENTO, CALIFORNIA

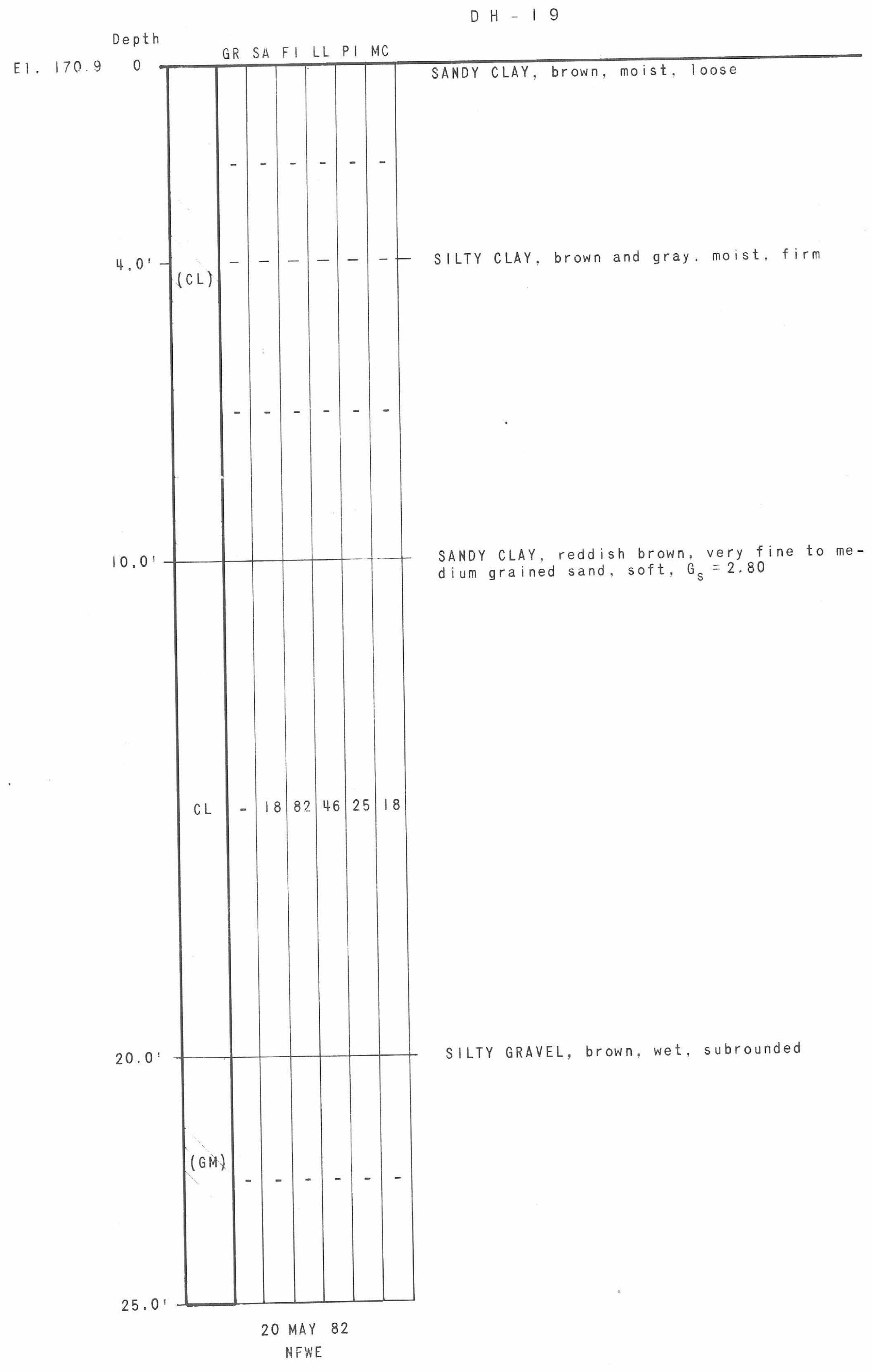
DESIGNED: J. K. RYAN
DRAWN: S. JANG
CHECKED K. MYERS

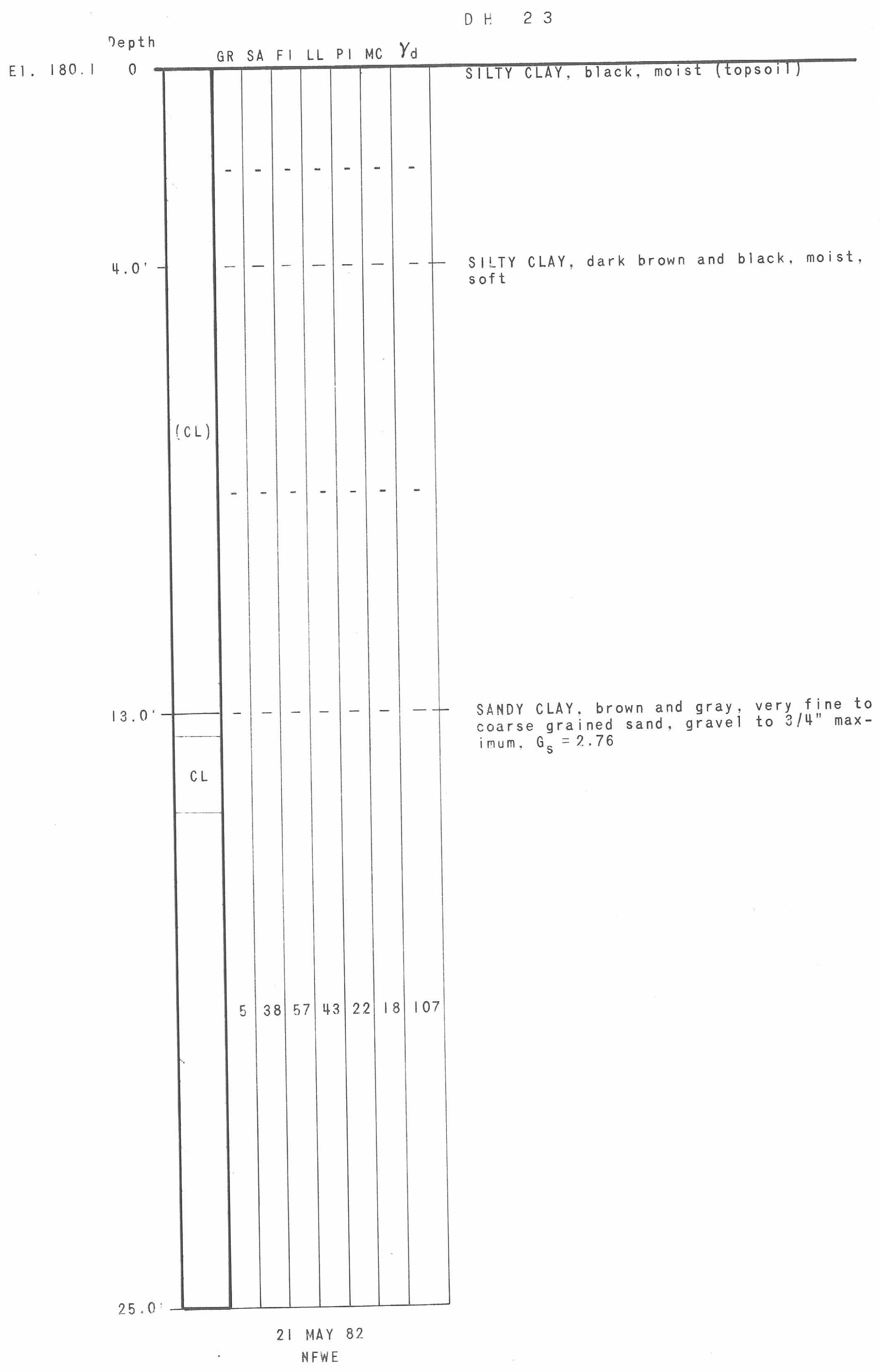
PAJARO RIVER, CALIFORNIA
UVAS CREEK LEVEE AT GILROY
SANTA CLARA COUNTY, CALIFORNIA
LEVEE IMPROVEMENT AND CONSTRUCTION

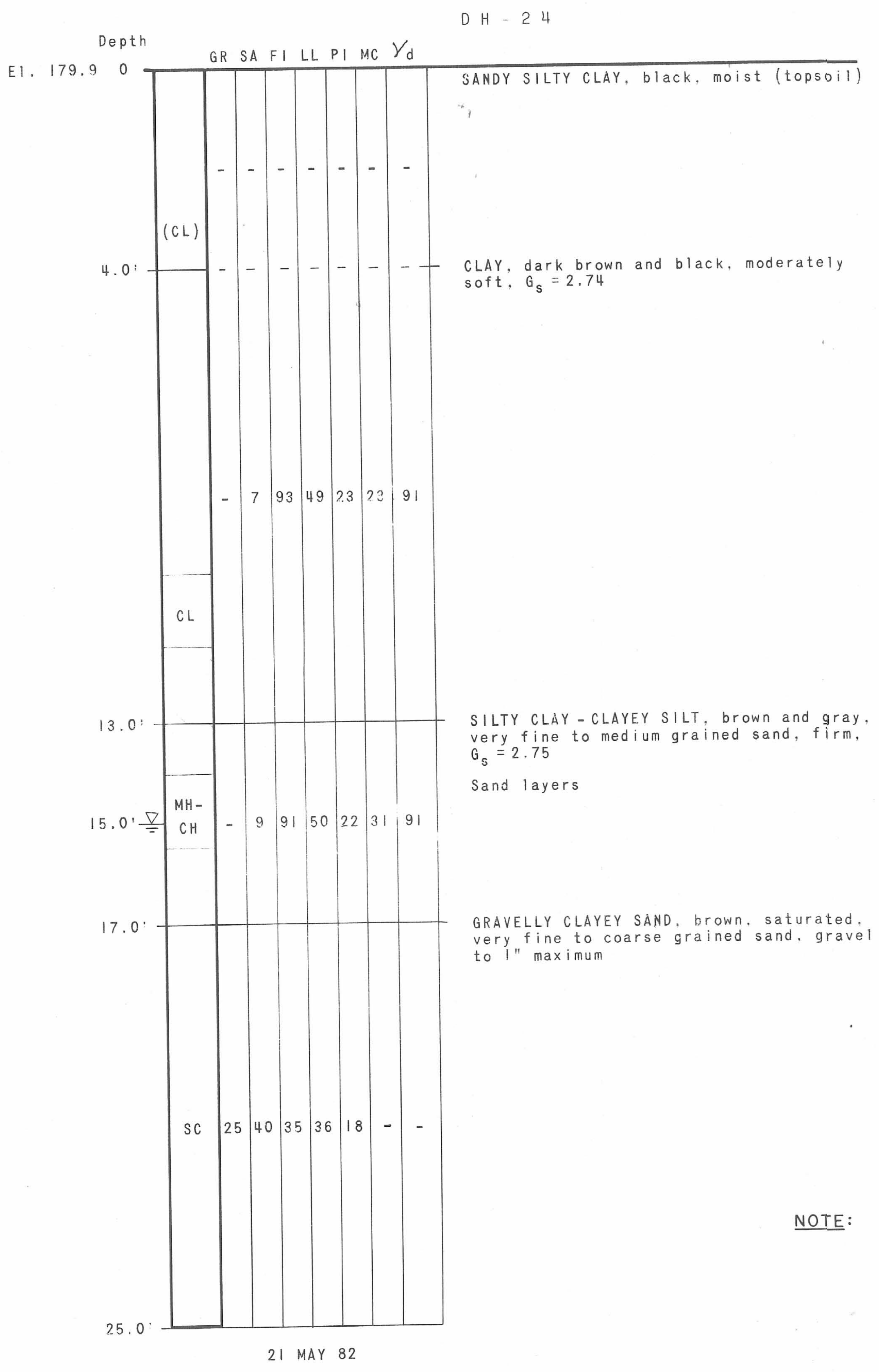
PLAN

STA. 109+00 TO STA. 114+76

SUBMITTED
CHIEF, CIVIL DESIGN SECTION C
DATE APPROVED:
SCALE: 1" = 100'
SPEC. No. 7495
SHEET 6
FILE No. PA-18-4-05


DH - 19
Depth
El. 170.9 0
GR SA FI LL PI MC
SANDY CLAY, brown, moist, loose
- - - - - -
4.0'
(CL)
SILTY CLAY, brown and gray, moist, firm
- - - - - -
10.0'
SANDY CLAY, reddish brown, very fine to medium grained sand, soft, $G_s = 2.80$
CL - 18 82 46 25 18
20.0'
SILTY GRAVEL, brown, wet, subrounded
(GM) - - - - - -
25.0'
20 MAY 82
NFWE


DH 23
Depth
El. 180.1 0
GR SA FI LL PI MC γ_d
SILTY CLAY, black, moist (topsoil)
- - - - - - -
4.0'
SILTY CLAY, dark brown and black, moist, soft
(CL)
- - - - - - -
13.0'
SANDY CLAY, brown and gray, very fine to coarse grained sand, gravel to 3/4" maximum, $G_s = 2.76$
CL
5 38 57 43 22 18 107
25.0'
21 MAY 82
NFWE


DH - 24
Depth
El. 179.9 0
GR SA FI LL PI MC γ_d
SANDY SILTY CLAY, black, moist (topsoil)
- - - - - - -
(CL)
4.0'
CLAY, dark brown and black, moderately soft, $G_s = 2.74$
- 7 93 49 23 23 91
CL
13.0'
SILTY CLAY - CLAYEY SILT, brown and gray, very fine to medium grained sand, firm, $G_s = 2.75$
Sand layers
15.0'
MH-CH - 9 91 50 22 31 91
17.0'
GRAVELLY CLAYEY SAND, brown, saturated, very fine to coarse grained sand, gravel to 1" maximum
SC 25 40 35 36 18 - -
25.0'
21 MAY 82

NOTE: For legend and additional notes, see sheet II.

ENVIRONMENTAL
ENHANCEMENT
THRU ENGINEERING

SANTA CLARA_CA Work Maps
SANTA CLARA_CA0235

REVISION	DATE	DESCRIPTION	BY	BY
△				
△				

DEPARTMENT OF THE ARMY
SACRAMENTO DISTRICT, CORPS OF ENGINEERS
SACRAMENTO, CALIFORNIA

DESIGNED: K. Swanson
DRAWN: K.Wahl / J. Hayes
CHECKED: D. J. Anderson

PAJARO RIVER, CALIFORNIA
UVAS CREEK LEVEE AT GILROY
SANTA CLARA COUNTY, CALIFORNIA
LEVEE IMPROVEMENT AND CONSTRUCTION

LOGS OF BORINGS

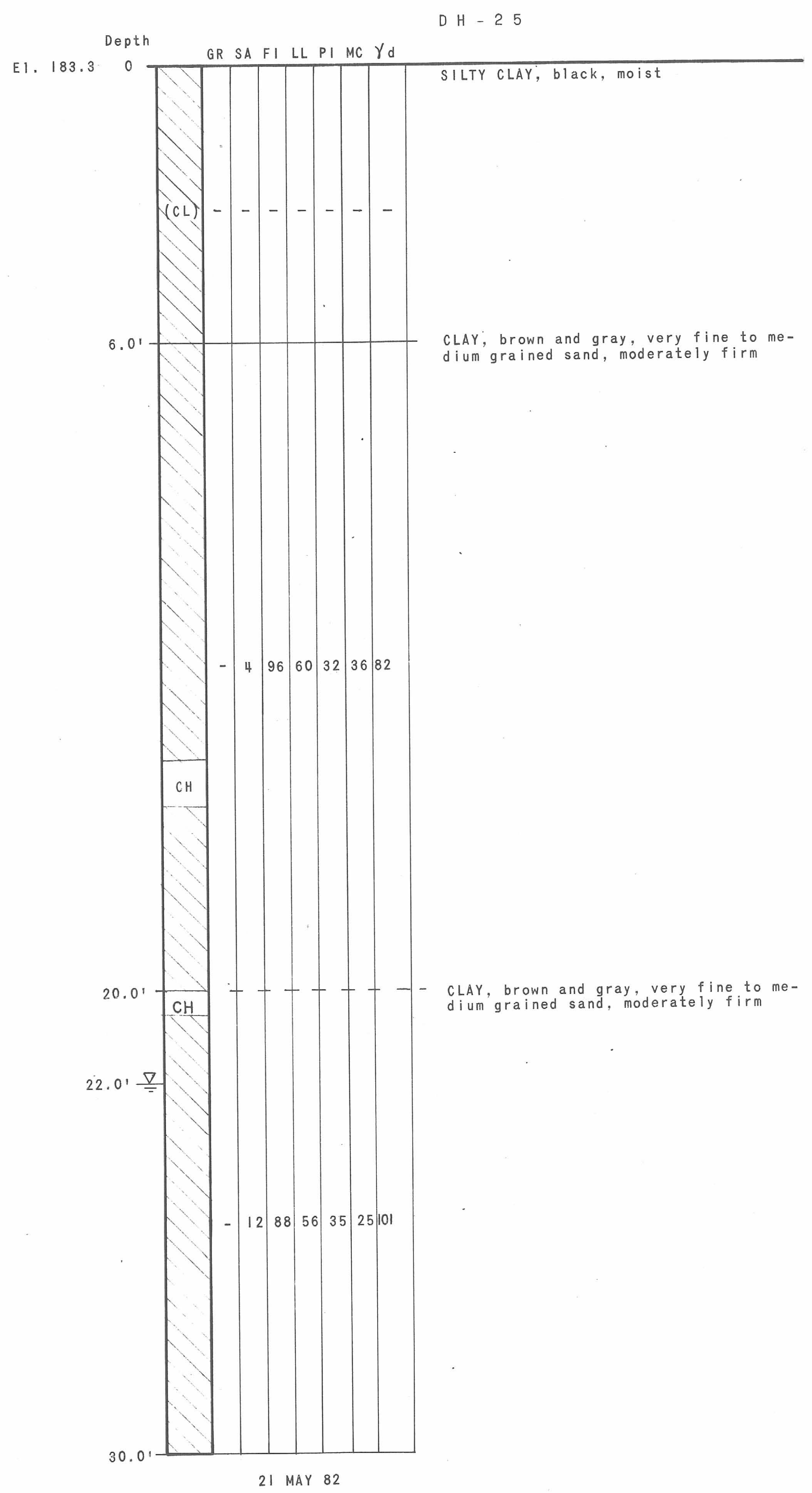
BORROW AREA

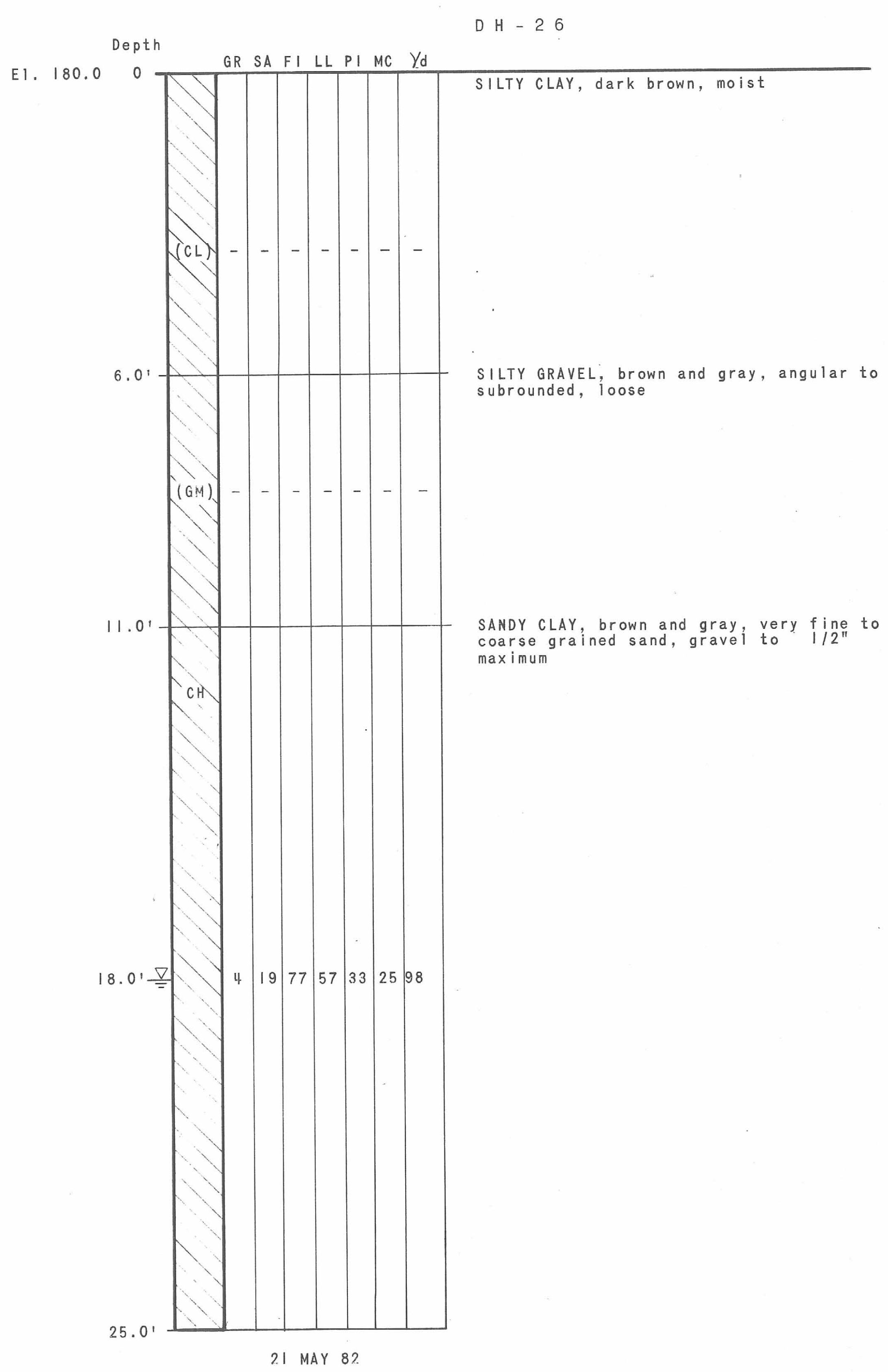
DH-19, DH-23 & DH-24
PHASE I

SUBMITTED: Darrell L. Anderson
CHIEF, SOIL DESIGN SECTION

DATE APPROVED: JUL 21 1987

SCALE:
SPEC. No. 7495
SHEET 12
FILE No. PA-18-4-05




DH-26
Depth
GR SA FI LL PI MC γd
El. 180.0 0
SILTY CLAY, dark brown, moist
(CL) - - - - - - -
6.0'
SILTY GRAVEL, brown and gray, angular to subrounded, loose
(GM) - - - - - - -
11.0'
SANDY CLAY, brown and gray, very fine to coarse grained sand, gravel to 1/2" maximum
CH
18.0'
4 19 77 57 33 25 98
25.0'
21 MAY 82

NOTE: For legend and additional notes, see sheet 11.

SANTA CLARA_CA Work Maps
SANTA CLARA_CA0236

REVISION	DATE	DESCRIPTION	BY	BY
△				
△				

DEPARTMENT OF THE ARMY
SACRAMENTO DISTRICT, CORPS OF ENGINEERS
SACRAMENTO, CALIFORNIA

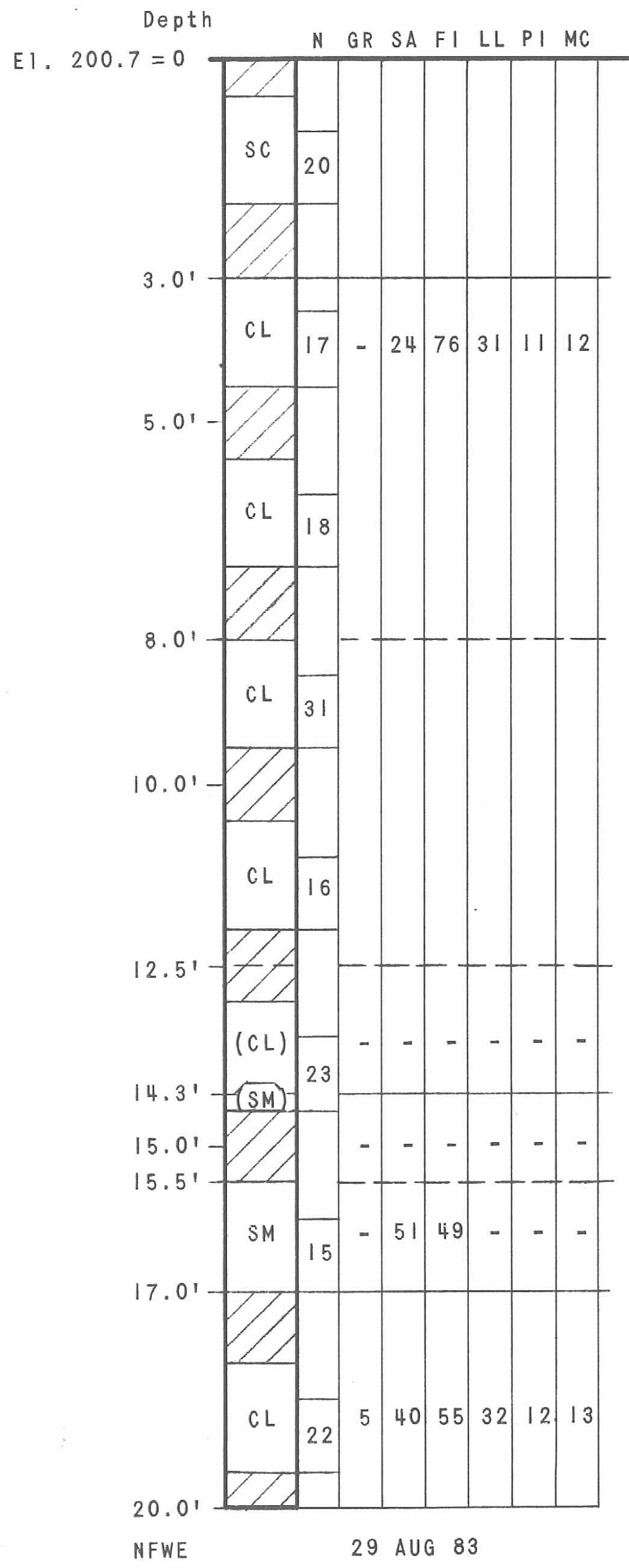
DESIGNED: K. Swanson
DRAWN: K. Wahl / J. Hayes
CHECKED: D. J. Anderson

PAJARO RIVER, CALIFORNIA
UVAS CREEK LEVEE AT GILROY
SANTA CLARA COUNTY, CALIFORNIA
LEVEE IMPROVEMENT AND CONSTRUCTION

LOGS OF BORINGS
BORROW AREA

DH-25 & DH-26
PHASE I

SUBMITTED: Darrell L. Anderson
CHIEF, SOIL DESIGN SECTION
DATE APPROVED: JUL 21 1987
SCALE: NO SCALE
SPEC. No. 7495
SHEET 13
FILE No. PA-18-4-05



*CLAYEY SAND, dark yellow-brown, damp, est. 60% fine grained sand, est. 40% medium plasticity fines, traces of hard angular to subangular gravel to 3/8" maximum, very stiff

SANDY CLAY, brown, very fine grained sand, stiff

At 6.5' depth, organic material (roots, etc.), very stiff

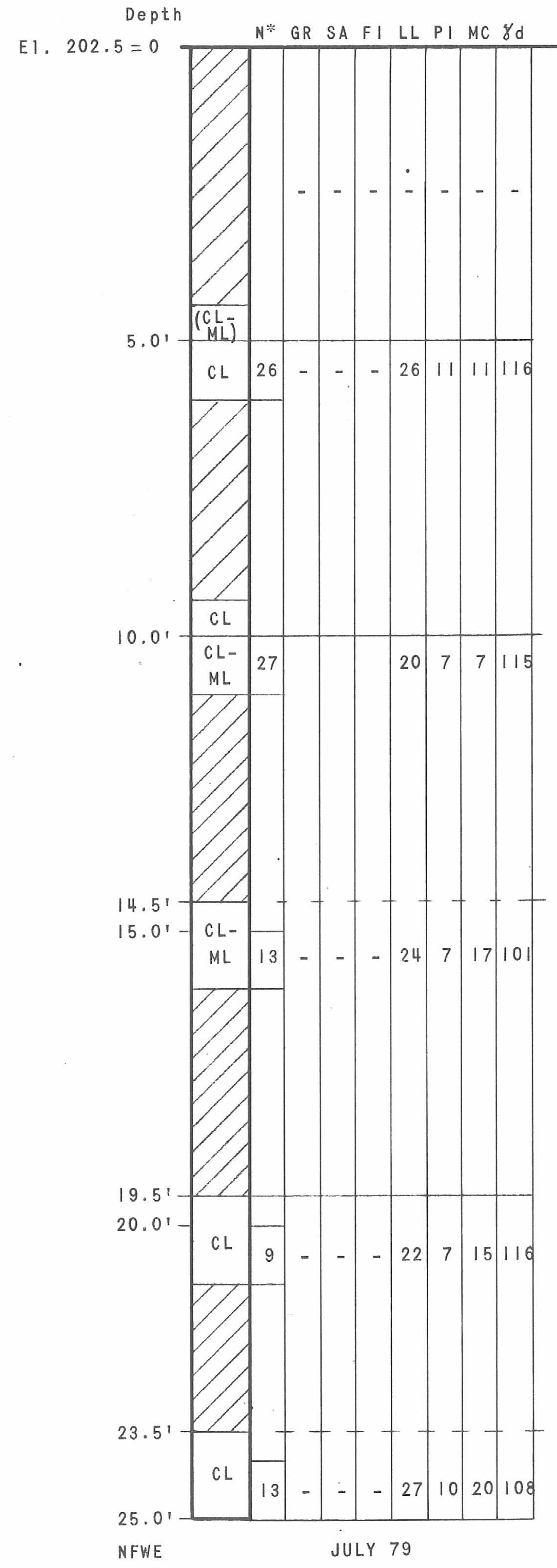
*SANDY CLAY, dark yellow-brown, very damp, est. 65% medium plasticity fines, est. 35% fine grained sand, very stiff at 9.0', stiff at 11.0'
At 9.5' depth, some organic material (roots, etc.)

SANDY CLAY, brown, moist, est. 70% low plasticity fines, est. 30% subangular fine grained sand, some organic material (black), very stiff

GRAVELLY SILTY SAND, brown, moist, est. 60% subangular medium to coarse grained sand, est. 20% non-plastic fines, est. 20% subangular gravel

SILTY SAND, brown, damp, very fine to medium grained subangular sand, non-plastic fines, stiff

SANDY CLAY, mottled gray brown, graded subangular sand, gravel to 1" maximum, very stiff



SILTY CLAY - CLAYEY SILT, brown, dry, very stiff

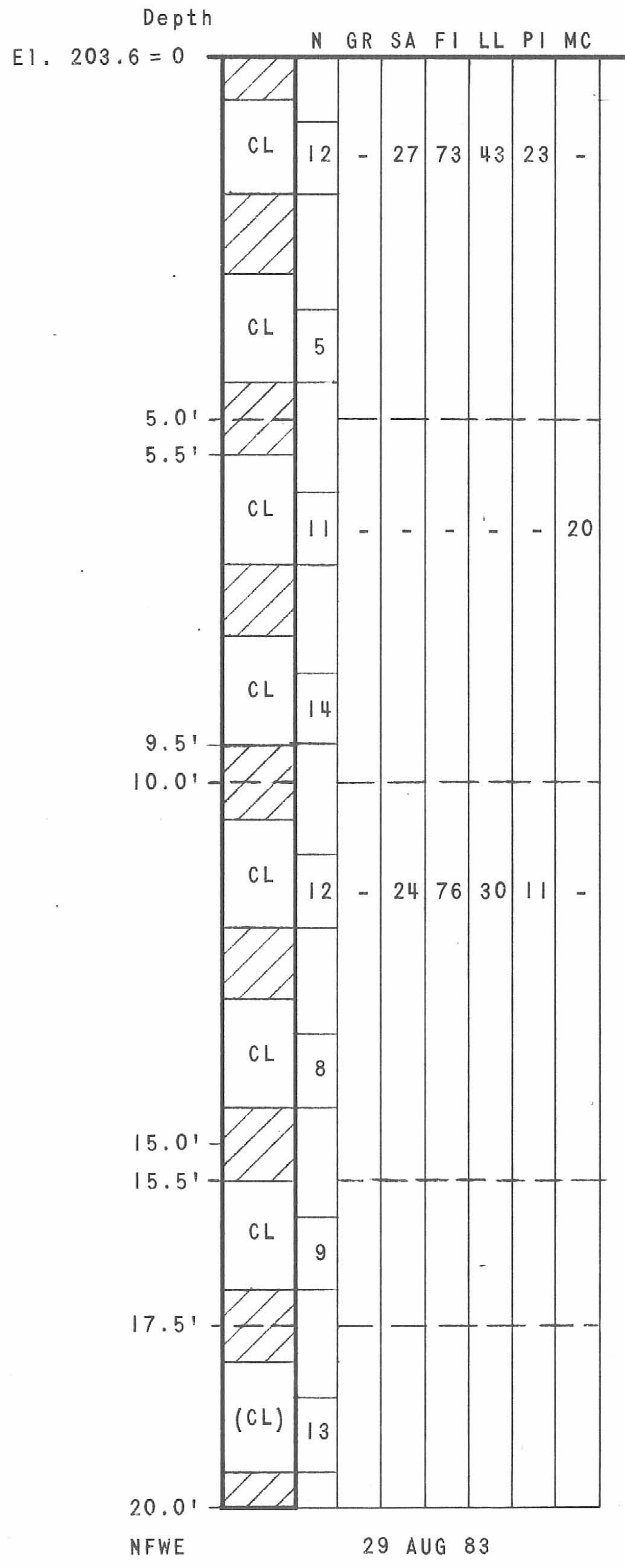
SILTY CLAY, brown, unconfined compressive strength (Q_u) = 10.0 tsf, very stiff

SILTY CLAY - CLAYEY SILT, brown, very stiff

As above, damp, unconfined compressive strength (Q_u) = 1.19 tsf, stiff

SANDY CLAY, brown, unconfined compressive strength (Q_u) = 0.66 tsf, stiff

As above, unconfined compressive strength (Q_u) = 0.55 tsf, stiff



SANDY CLAY, brown, damp, very fine grained sand, stiff

At 3.5' depth, soft

*SANDY CLAY, dark brown, est. 75% medium plasticity fines, est. 25% fine grained sand, stiff

At 8.5' depth, minor amounts of decayed organic material, stiff

SANDY CLAY, brown, moist to wet, very fine grained sand, stiff

At 13.0'-14.0', some decayed organic material
At 13.5' depth, firm
Soil is wet below 14.0'

*SANDY CLAY, dark brown, est. 65% medium plasticity fines, est. 35% fine grained sand, stiff

SANDY CLAY, mottled gray brown, very fine grained sand, stiff

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			GROUP SYMBOLS	TYPICAL NAMES
COARSE GRAINED SOILS 50% or more retained on the No. 200 sieve.	GRAVELS More than half of coarse fraction retained on the No. 4 sieve.	Clean Gravels	G W	Well-graded gravels, gravel-sand mixtures, little or no fines.
			G P	Poorly-graded gravels, gravel-sand mixtures, little or no fines.
		Gravels with fines	G M	Silty gravels, gravel-sand mixtures.
			G C	Clayey gravels, gravel-sand-clay mixtures.
	SANDS More than half of coarse fraction passing the No. 4 sieve.	Clean sands	S W	Well-graded sands, gravelly sands, little or no fines.
			S P	Poorly-graded sands, gravelly sands, little or no fines.
		Sands with fines	S M	Silty sands, sand-silt mixtures.
			S C	Clayey sands, sand-clay mixtures.
FINE GRAINED SOILS More than 50% passing the No. 200 sieve.	SILTS AND CLAYS	Liquid Limit below 50%	M L	Inorganic silts and very fine sands, rock flour, silty fine sands or silts. Plasticity below "A" line.
			C L	Inorganic clays, gravelly clays, sandy clays, lean clays. Plasticity above "A" line.
			O L	Organic silts and organic clays. Plasticity below "A" line.
		Liquid Limit 50% and above	M H	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts. Plasticity below "A" line.
			C H	Inorganic fat clays. Plasticity above "A" line.
			O H	Organic clays or organic silts. Plasticity below "A" line.
Highly organic soils			P t	Peat, organic content greater than 60%.

STANDARD PENETROMETER DESCRIPTIVE DATA

COHESIONLESS		COHESIVE	
Blows*	Relative Density	Blows*	Consistency
0-4	Very Loose	0-1	Very Soft
5-10	Loose	2-4	Soft
11-20	Firm	5-8	Firm
21-30	Very Firm	9-15	Stiff
31-50	Dense	16-30	Very Stiff
51+	Very Dense	31+	Hard

*Blows per 1.0 ft. of penetration of a 2-inch O.D. and 1⅜-inch I.D. sampler driven by a 140-lb. hammer, 30-inch freefall.

LEGEND:

G_s	Specific Gravity.
▽	Groundwater Level.
GR	Gravel, percent by weight passing 3-inch sieve and retained on the No. 4 sieve.
SA	Sands, percent by weight passing the No. 4 sieve and retained on the No. 200 sieve.
FI	Fines, percent by weight passing the No. 200 sieve.
LL	Liquid Limit.
PI	Plasticity Index (Liquid Limit Minus Plastic Limit).
MC	Field Moisture Content in Percent of Dry Weight.
( )	Visual Field Classification.
*	Laboratory Visual Classification.
N	Number of Blows of Standard Penetrometer.
N*	Number of Blows of Standard Penetrometer converted from California Modified Penetrometer Values.
N**	Number of Blows of Standard Penetrometer converted from 3" O.D. Sampler values.

NOTES:

1. Classifications are in accordance with the Unified Soils Classification System (ASTM D-2487).
2. All sieve sizes on the chart are U.S. Standard.
3. The terms "silt" and "clay" are used respectively to distinguish materials exhibiting lower plasticity from those with higher plasticity. The minus No. 200 sieve material is silt if the liquid limit and plasticity index plot below the "A" line on the plasticity chart (ASTM D-2487) and is clay if the liquid limit and plasticity index plot above the "A" line on the chart.
4. Borderline Classification: Soils possessing characteristics of two groups are designated by combinations of group symbols. For example GW-GC, a well-graded gravel-sand mixture with a clay binder.
5. DH-1A thru DH-6A were drilled with a CME-55 truck mounted drill rig using either continuous flight or hollow stem augers in July 1981. These explorations were performed by J.H. Kleinfelder and Associates for the Corps of Engineers, San Francisco District.
6. Borings 7F-1 thru 7F-4, 2F-7 thru 2F-17 were drilled with a Mobile B-24 drill rig equipped with a continuous flight auger by Anderson Geotechnical on 29 thru 31 August 1983.
7. DH-10 and DH-12 were drilled by Terratech, Inc., using a continuous flight auger, in June 1983. This exploration program was part of the Ground Water Recharge Evaluation, Uvas Creek Park Area, Gilroy, CA, conducted by the Gavilan Water Conservation District.
8. Groundwater level is shown if measured, otherwise no free water encountered (NFWE) during drilling is noted on the logs.

LEGEND (CONTINUED)

NFWE	No Free Water Encountered.
γd	Dry Unit Weight (PCF).
▨	Interval not sampled.
O.W.	Observation well installed.

NOTES (CONTINUED)

9. Refusal of the Standard Penetrometer is as one of the following:
   a. 25 blows for 1" or less advancement.
   b. 50 blows for 1" to 6" advancement.
10. Locations of explorations are shown on plan sheets.
11. Top of hole elevations are approximate and are based on National Geodetic Vertical Datum of 1929.

SANTA CLARA_CA Work Maps
SANTA CLARA_CA0237

REVISION	DATE	DESCRIPTION	BY	BY
△				
△				

DEPARTMENT OF THE ARMY
SACRAMENTO DISTRICT, CORPS OF ENGINEERS
SACRAMENTO, CALIFORNIA

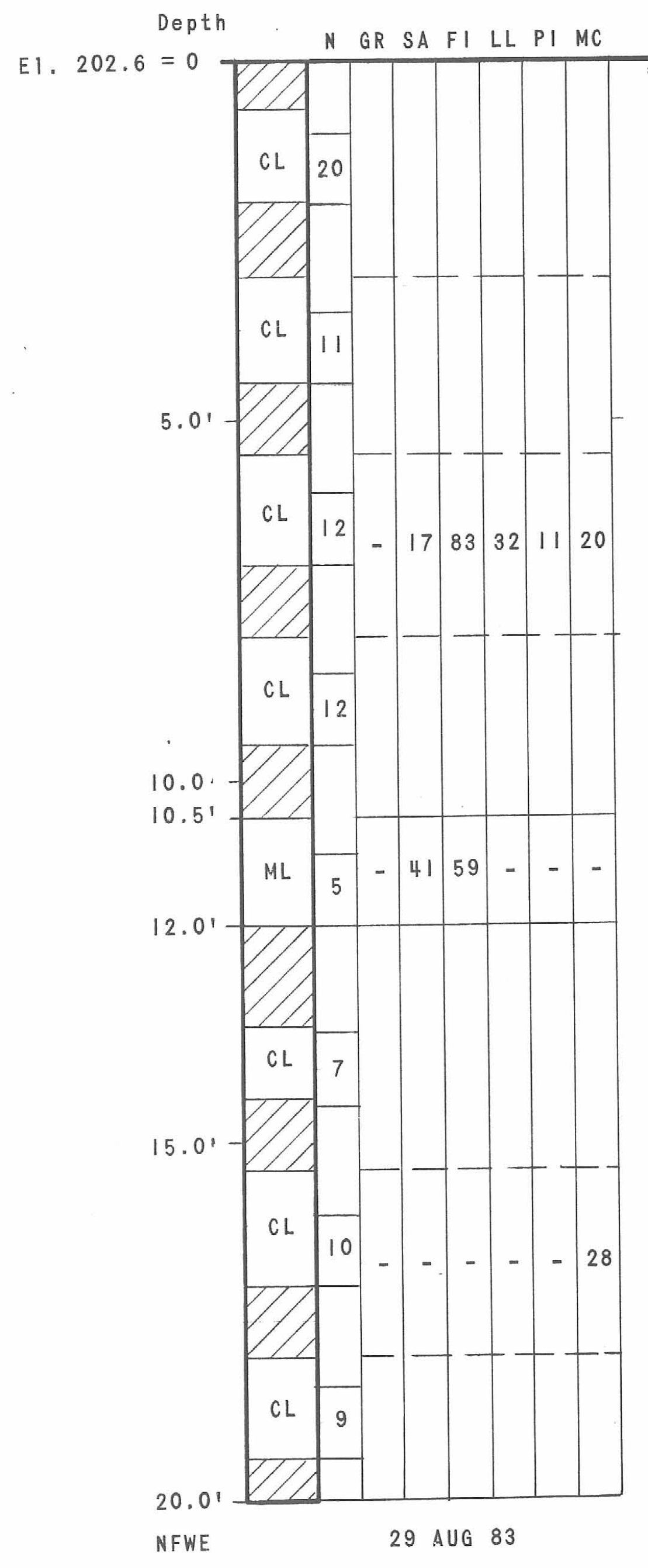
DESIGNED: P.Lee / K. Swanson
DRAWN: K. Wahl / J. Hayes
CHECKED: D. J. Anderson

PAJARO RIVER, CALIFORNIA
UVAS CREEK LEVEE AT GILROY
SANTA CLARA COUNTY, CALIFORNIA
LEVEE IMPROVEMENT AND CONSTRUCTION
LOGS OF BORINGS
FOUNDATION
2F-7, DH-6A & 2F-8
PHASE I

SUBMITTED:
CHIEF, SOIL DESIGN SECTION
DATE APPROVED: JUL 21 1987
SCALE. NO SCALE
SPEC. No. 7495
SHEET 14
FILE No. PA-18-4-05

ENVIRONMENTAL ENHANCEMENT THRU ENGINEERING

2 F - 9



*SANDY CLAY, dark brown, damp, est. 75% medium plasticity fines, est. 25% fine grained sand, very stiff to stiff

As Above

SANDY CLAY, brown, very fine grained sand, stiff

As above

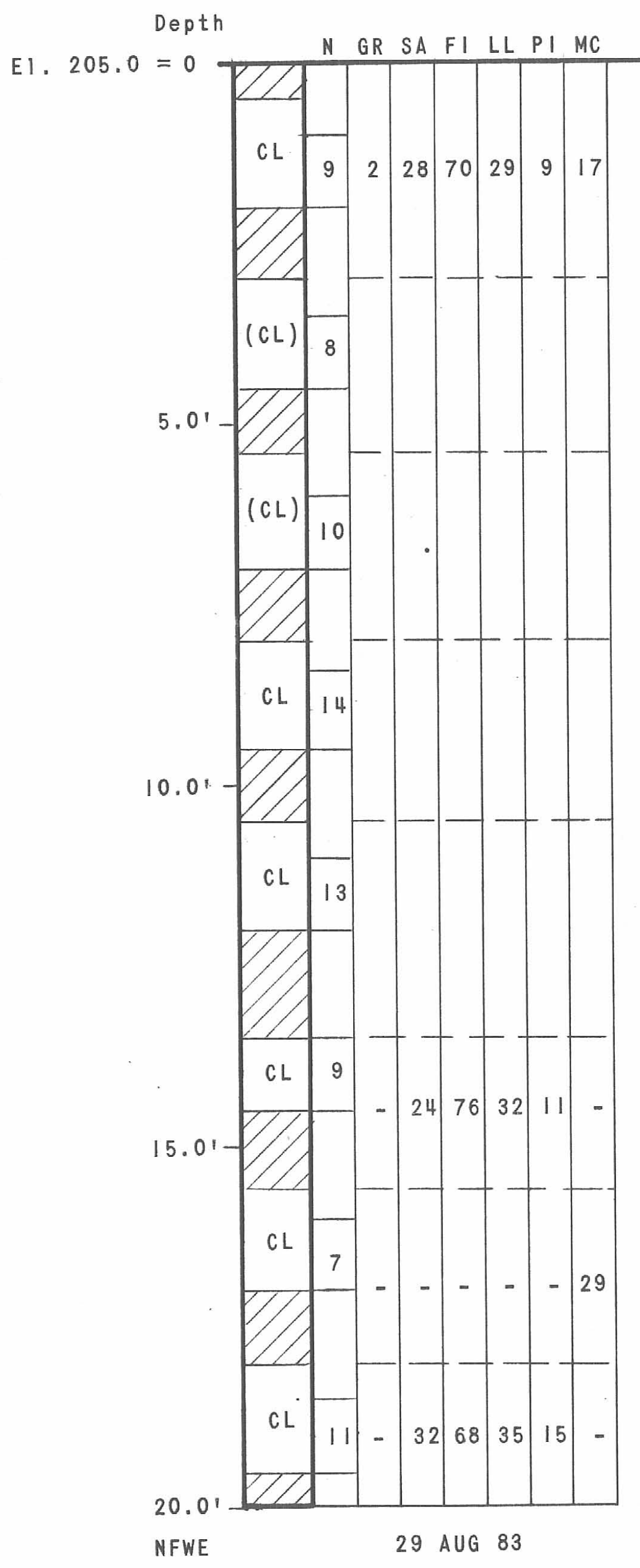
SANDY SILT, brown to mottled gray brown, moist to wet, non-plastic fines, very fine to fine grained subangular sand, firm

*SANDY CLAY, dark brown, est. 80% medium plasticity fines, est. 20% fine grained sand, firm to stiff, minor decayed organic matter at 16.0'

As above

*SANDY CLAY, brown, moist, est. 45-55% fine grained subangular sand, est. 45-55% non- to low plasticity fines, stiff, sand increases with depth

2 F - 10



SANDY CLAY, brown, very fine to fine grained sand, gravel to 3/4" diameter, stiff

SANDY CLAY, dark brown, moist, est. 80% low plasticity fines, est. 20% fine grained subangular sand, firm to stiff, decayed organic material at 6.0'

As above

*SANDY CLAY, dark brown, moist, est. 80% medium plasticity fines, est. 20% fine grained sand, stiff, decayed organic material observed in field at 8.5'

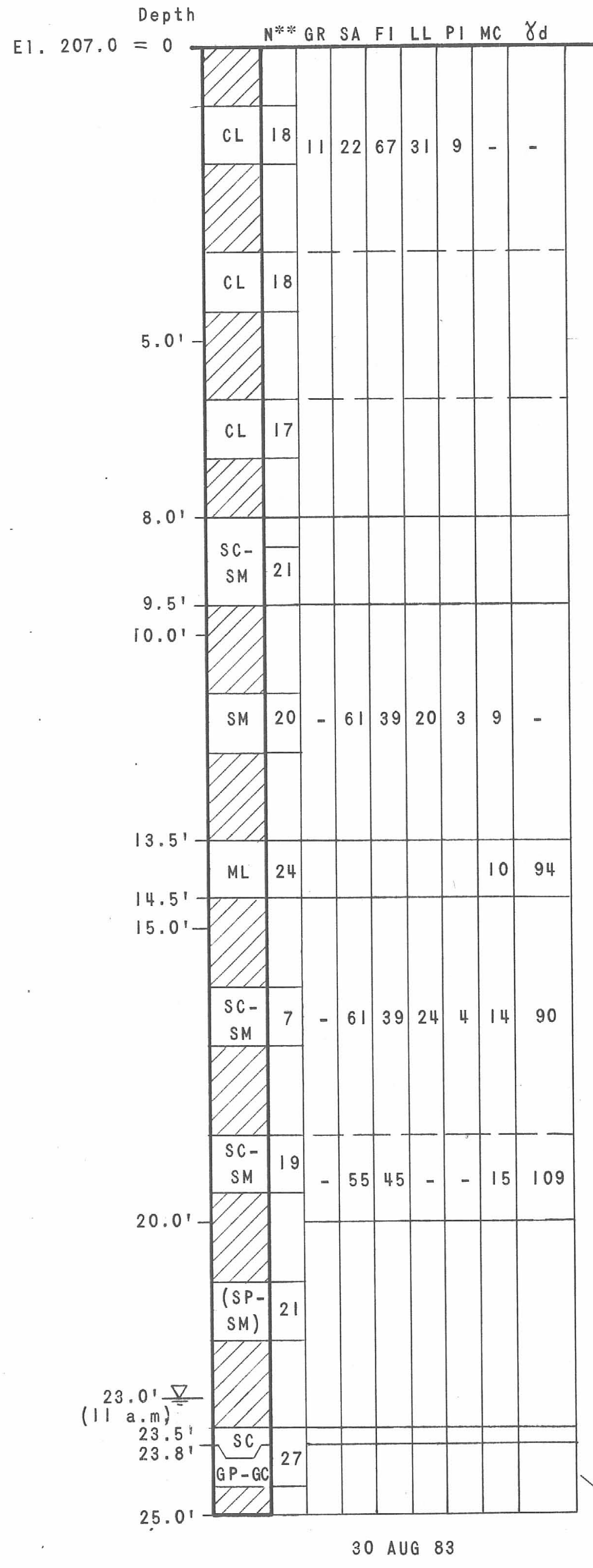
As above

SANDY CLAY, brown, moist to wet, very fine to fine grained sand, stiff

*SANDY CLAY, dark brown, est. 85% medium plasticity fines, est. 15% fine grained sand, firm

SANDY CLAY, mottled gray-brown with iron oxide staining, moist to wet, very fine grained sand, stiff

7 F - 1



SANDY SILTY CLAY, dark brown, dry, fine to coarse sand, gravel to 3/4" diameter, very stiff

As above

As above

*SILTY CLAYEY SAND, dark yellow brown, damp, est. 60% fine grained sand, est. 40% low to medium plasticity fines, very firm

SILTY SAND, brown, very fine to medium grained sand, firm

*SANDY SILT, brown, damp, est. 60-70% non- to low plasticity fines, est. 30-40% fine grained sand, very stiff, unconfined compressive strength $Q_u = 0.48$ tsf

CLAYEY-SILTY SAND, brown, very fine grained sand, $G_s = 2.72$, loose to firm, consolidated-undrained (R) strength: $\phi = 29°$

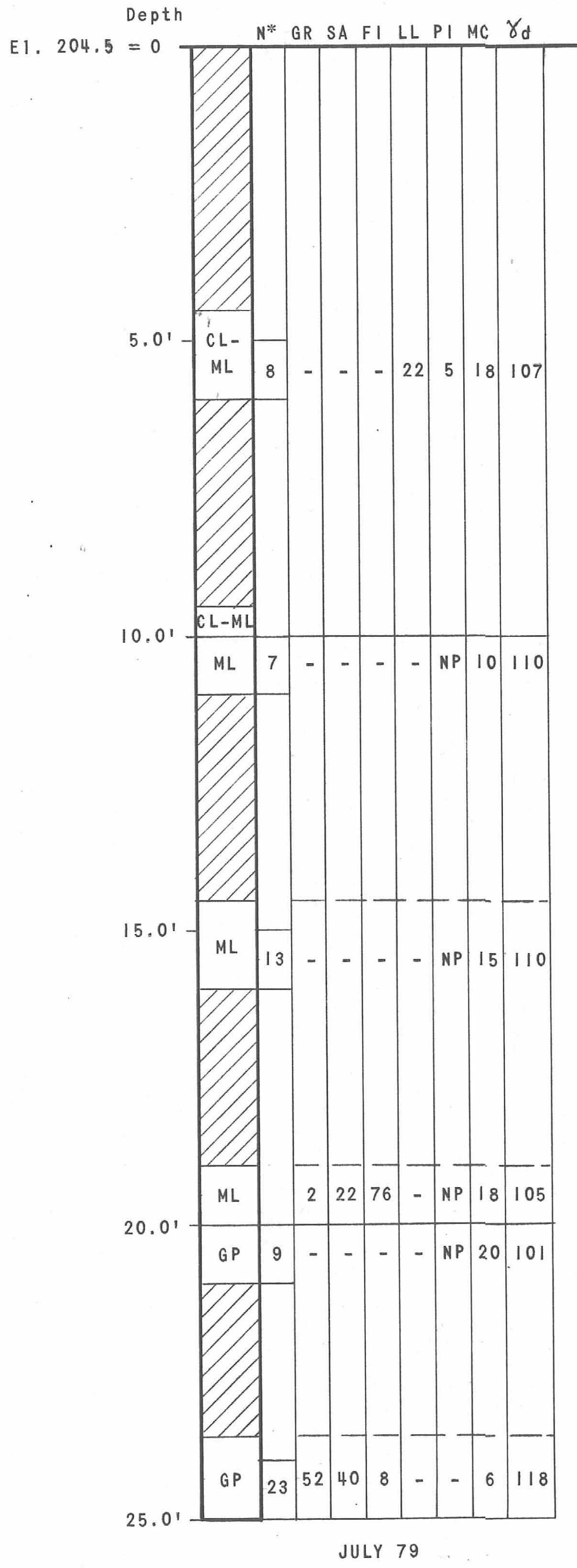
As above

SILTY GRAVELLY SAND, brown, wet, est. 70-80% subangular medium to coarse grained sand, est. 20% subrounded gravel to 1-1/2" diameter, est. 0-10% non-plastic fines

*CLAYEY SAND, dark yellow-brown, wet, est. 60% graded sand, est. 40% medium plasticity fines

*CLAYEY SANDY GRAVEL, dark yellow-brown, wet, est. 60-70% well graded angular to subangular gravel to 1-1/2" diameter, est. 25-35% graded sand, est. 5% medium plasticity fines, very firm

D H - 4 A



SILTY CLAY - CLAYEY SILT, dark brown, dry to damp, firm, unconfined compressive strength $Q_u = 1.11$ tsf

SANDY SILT, firm at 10.0', stiff at 15.0', firm at 19.0', unconfined compressive strength $Q_u = 1.74$ tsf

As above, unconfined compressive strength $Q_u = 1.29$ tsf

As above

SILTY SANDY GRAVEL, brown, moist, gravel to 1.5" diameter, amount increasing with depth, loose to very firm, unconfined compressive strength $Q_u = 0.48$ tsf

As above

NOTE: For legend and additional notes, see sheet 14.

REVISION	DATE	DESCRIPTION	BY	BY
△				
△				

DEPARTMENT OF THE ARMY
SACRAMENTO DISTRICT, CORPS OF ENGINEERS
SACRAMENTO, CALIFORNIA

DESIGNED: P. Lee / K. Swanson
DRAWN: K. Wahl / J. Hayes
CHECKED: D. J. Anderson

PAJARO RIVER, CALIFORNIA
UVAS CREEK LEVEE AT GILROY
SANTA CLARA COUNTY, CALIFORNIA
LEVEE IMPROVEMENT AND CONSTRUCTION

LOGS OF BORINGS

FOUNDATION
2F-9, 2F-10, 7F-1 & DH-4A
PHASE I

SUBMITTED: Donald J. Anderson
CHIEF, SOIL DESIGN SECTION
DATE APPROVED: JUL 31 1987
SCALE: NO SCALE
SPEC. No. 7495
SHEET 15
FILE No. PA-18-4-05

SANTA CLARA_CA Work Maps
SANTA CLARA_CA0238

FUNCTIONAL ANALYSIS - VE PAYS

7F-2

Depth	Symbol	N**	GR	SA	FI	LL	PI	MC	γd	Description
El. 213.5 = 0	SC	12								*CLAYEY SAND, dark yellow-brown, damp, est. 50% well graded sand, est. 40% medium plasticity fines, est. 10% angular to subangular gravel to 1/2" diameter, firm
3.5'	SC	21	33	34	33	26	8	10	-	CLAYEY GRAVELLY SAND, brown, fine to coarse grained sand, angular gravel to 1-1/2" diameter, very firm
5.0'	(GP)	35	-	-	-	-	-	10	120	SILTY SANDY GRAVEL, brown, dry, est. 45-55% angular gravel, est. 35% medium to coarse grained sand, est. 10-20% fines
8.0'	SC	23								*GRAVELLY CLAYEY SAND, dark brown with mottled red and yellow-brown, moist, est. 55% well graded sand, est. 35% medium plasticity fines, est. 10% hard to soft subangular gravel to 3/4" diameter, very firm at 9.0', dense at 11.0'
10.0'										
11.7'	SC / GC	32						15		*CLAYEY SANDY GRAVEL, est. 55% gravel, est. 30% graded sand, est. 15% medium plasticity fines, very firm
	GC	29								
15.0'	CL	51								SANDY CLAY, brown, damp, fine to coarse grained sand, angular gravel to 3/8" diameter, G_s = 2.79, swell at 1.25 tsf load = 0.05% (negligible)
	CL	42	5	44	51	36	15	16	112	
20.0'										
21.0'	GC	R								*CLAYEY SANDY GRAVEL, brown, damp, est. 50% hard to soft gravel to 1" diameter, est. 30% well graded sand, est. 20% medium plasticity fines, very dense
21.5'	CL							13 14	113	*GRAVELLY SANDY CLAY, moist, est. 65-75% medium plasticity fines, est. 15-20% medium grained sand, est. 10-15% fine gravel, clayey sand pockets
23.5'	SC	49	14	44	42	40	20	16	115	CLAYEY SAND, brown, fine to coarse grained sand, gravel to 1/2" diameter, dense
25.0'										

NFWE

30 AUG 83

DH-5A

Depth	Symbol	N*	GR	SA	FI	LL	PI	MC	γd	Description
El. 214.7 = 0	(CL-ML)									SILTY CLAY - CLAYEY SILT, brown, dry, fine gravel, hard
5.0'	ML	53	7	43	50	-	-	11	123	SANDY SILT, hard, unconfined compressive strength (Q_u) = 10.0 tsf
	ML									
10.0'	SC	R	30	51	19	-	-	12	116	CLAYEY GRAVELLY SAND, very dense
15.0'	SC	24	13	63	24	-	-	15	119	GRAVELLY CLAYEY SAND, firm, unconfined compressive strength (Q_u) = 4.9 tsf
19.0'										SANDY CLAY, brown, dry to damp, fine to medium grained sand, hard, unconfined compressive strength (Q_u) = 9.5 tsf
20.0'	CL	R	0	41	59	-	-	15	117	
24.0'	SC	33	11	42	47	-	-	15	116	GRAVELLY CLAYEY SAND, brown, moist, very firm, unconfined compressive strength (Q_u) = 5.9 tsf
25.0'										

NFWE

JULY 79

2F-11

Depth	Symbol	N	GR	SA	FI	LL	PI	MC	Description
El. 207.1 = 0	CL	17							SANDY CLAY, dark brown, moist, very fine grained sand, very stiff at 1.0' depth, firm at 3.5'
	CL	7	-	13	87	37	13	-	
5.0'	CL	13	-	-	-	-	-	20	*SANDY CLAY, dark brown, est. 75% medium plasticity fines, est. 25% fine grained sand, stiff
	CL	14							At 8.5' depth, some decayed organic material
10.0'	CL	14							
13.0'	CL	13	-	30	70	30	10	-	SANDY CLAY, mottled gray brown with some iron oxide staining, moist to wet, very fine grained sand, stiff
15.0'									
15.5'	CL	11	-	-	-	-	-	22	*SANDY CLAY, dark brown, est. 55% medium plasticity fines, est. 45% fine grained sand, stiff
18.0'	CL	9	2	32	66	33	13	-	SANDY CLAY, mottled gray-brown, wet, very fine to medium grained sand, gravel to 1" diameter, stiff
20.0'									

NFWE

29 AUG 83

7F-3 (O.W.)

Depth	Symbol	N**	GR	SA	FI	LL	PI	MC	γd	Description
El. 200.0 = 0	SP-SM	16								SILTY GRAVELLY SAND, brown, fine to coarse grained sand, gravel to 1-1/2" diameter, non-plastic fines, firm
	SP-SM	14	33	55	12	-	-	13	108	
4.5'										
5.0'	(GP-GM)									At 5.0' depth, pieces of broken glass SANDY GRAVEL, dry, est. 80-90% subrounded to rounded gravel to 3" diameter, est. 10-20% medium to coarse grained sand
10.0'										
15.0'										
18.0'										GRAVELLY SANDY CLAY, reddish brown, damp, est. 70% medium plasticity fines, est. 20% rounded gravel, est. 10% medium to coarse grained sand, hard, consolidated undrained (R) strength: $\phi = 10°$, C = 1.0 tsf, effective strength $\phi = 37°$
20.0'	(CL)	35	-	-	-	-	-	17	111	
22.5'	GC	42	-	-	-	-	-	18	108	*CLAYEY SANDY GRAVEL, reddish brown, moist, est. 35-45% subangular gravel to 3/4" diameter, est. 30-40% sand, est. 20-30% medium plasticity fines, dense, unconfined compressive strength (Q_u) = 1.31 tsf
25.0'										

NFWE

30 AUG 83

NOTE: For legend and additional notes, see sheet 14.

REVISION	DATE	DESCRIPTION	BY	BY
△				
△				

DEPARTMENT OF THE ARMY
SACRAMENTO DISTRICT, CORPS OF ENGINEERS
SACRAMENTO, CALIFORNIA

DESIGNED: P. Lee
DRAWN: K. Wahl / J. Hayes
CHECKED: D. J. Anderson

PAJARO RIVER, CALIFORNIA
UVAS CREEK LEVEE AT GILROY
SANTA CLARA COUNTY, CALIFORNIA
LEVEE IMPROVEMENT AND CONSTRUCTION
LOGS OF BORINGS
FOUNDATION
7F-2, DH-5A, 2F-11 & 7F-3
PHASE I

SUBMITTED:
CHIEF, SOIL DESIGN SECTION
DATE APPROVED: JUL 21 1987

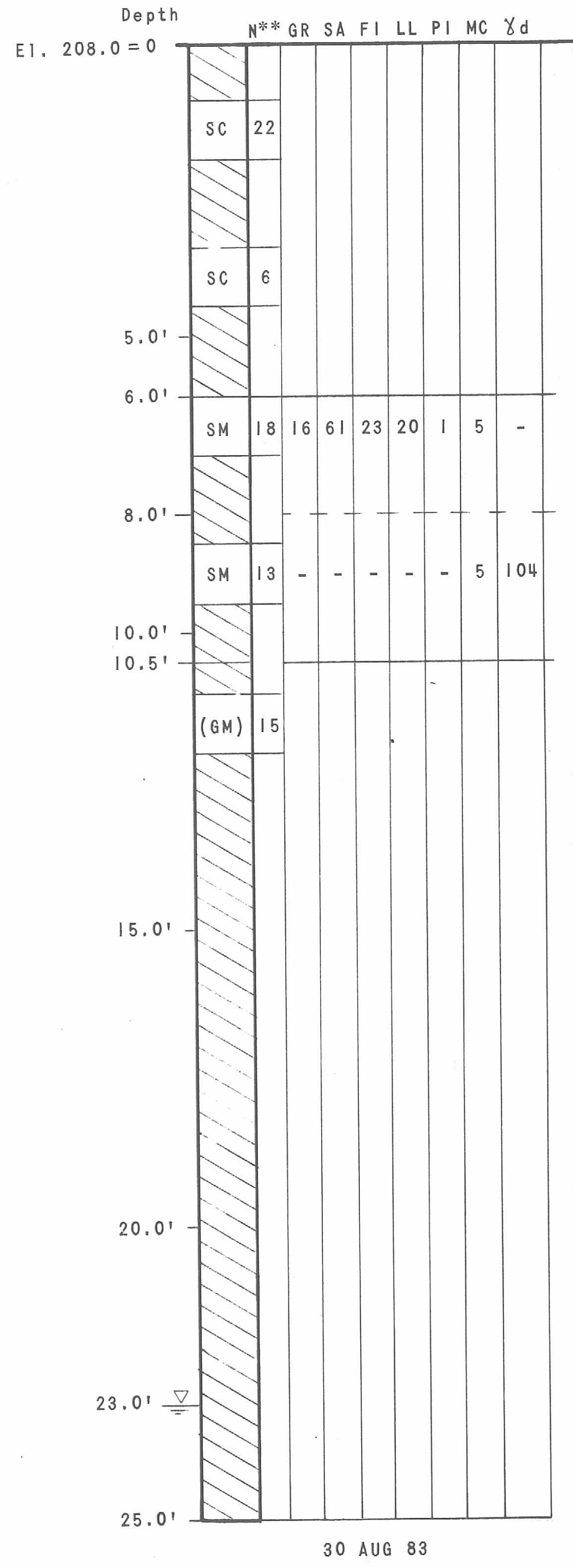
SCALE: NO SCALE
SPEC. No. 7495
SHEET 16
FILE No. PA-18-4-05

SAFETY PAYS

SANTA CLARA_CA Work Maps
SANTA CLARA_CA0239

ENVIRONMENTAL ENHANCEMENT THRU ENGINEERING

7F-4



*CLAYEY SAND, dark brown, damp, est. 85% sand, est. 15% low plasticity fines, traces of organics, very firm at 1.0' depth, loose at 4.0' depth.

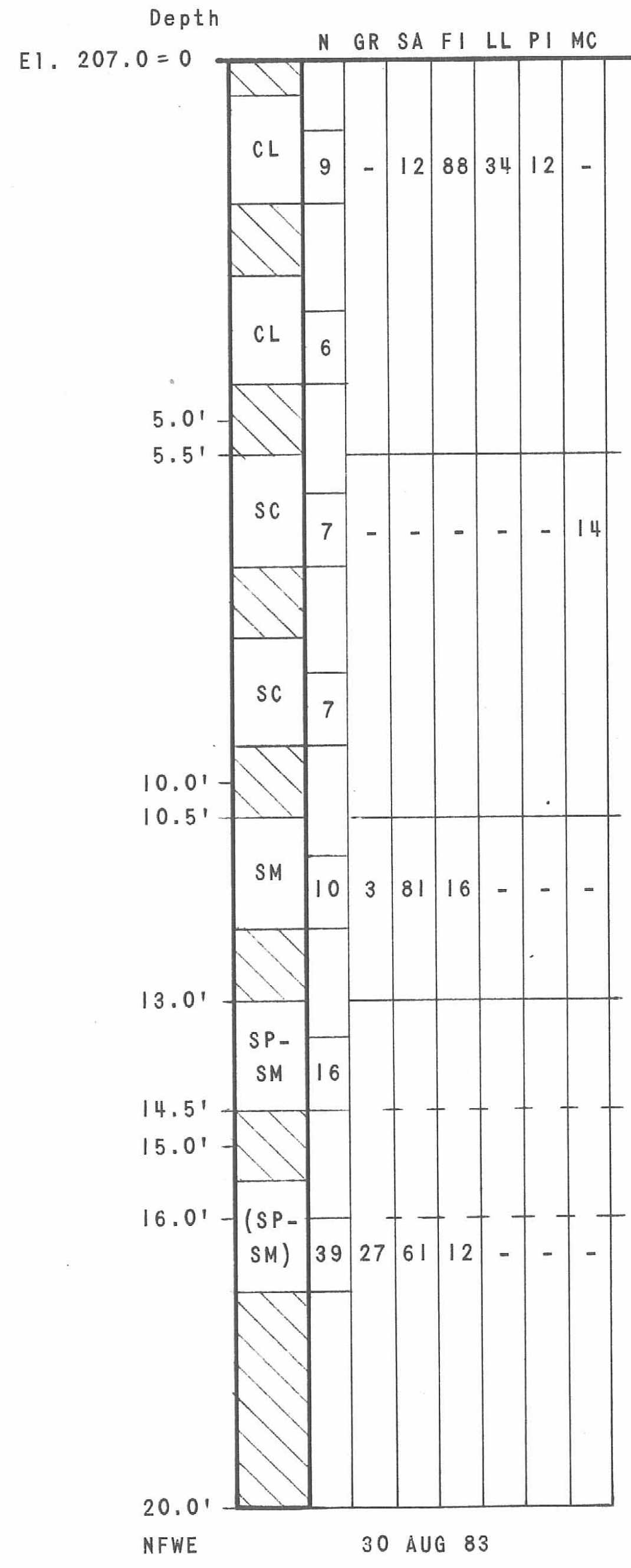
GRAVELLY SILTY SAND, brown, fine to coarse grained sand, gravel to 3/4" diameter, firm

As above

SILTY SANDY GRAVEL, brown, dry, est. 45-60% subangular to rounded gravel to 3" diameter, est. 30-40% medium to coarse grained sand, est. 10-20% non-plastic fines, firm

Not sampled beyond 11.0' depth due to gravelly nature of soil (caving experienced)

2F-12



SANDY CLAY, brown, dry, very fine grained sand, stiff at 1.0' depth, firm at 4.0' depth, At 1.0' depth, organic material observed in field

*CLAYEY SAND, dark brown, est. 55% fine grained sand, est. 45% medium plasticity fines, firm, organic material (roots, etc.)

SILTY SAND, brown, damp to moist, very fine to medium grained sand, gravel to 3/8" diameter, loose

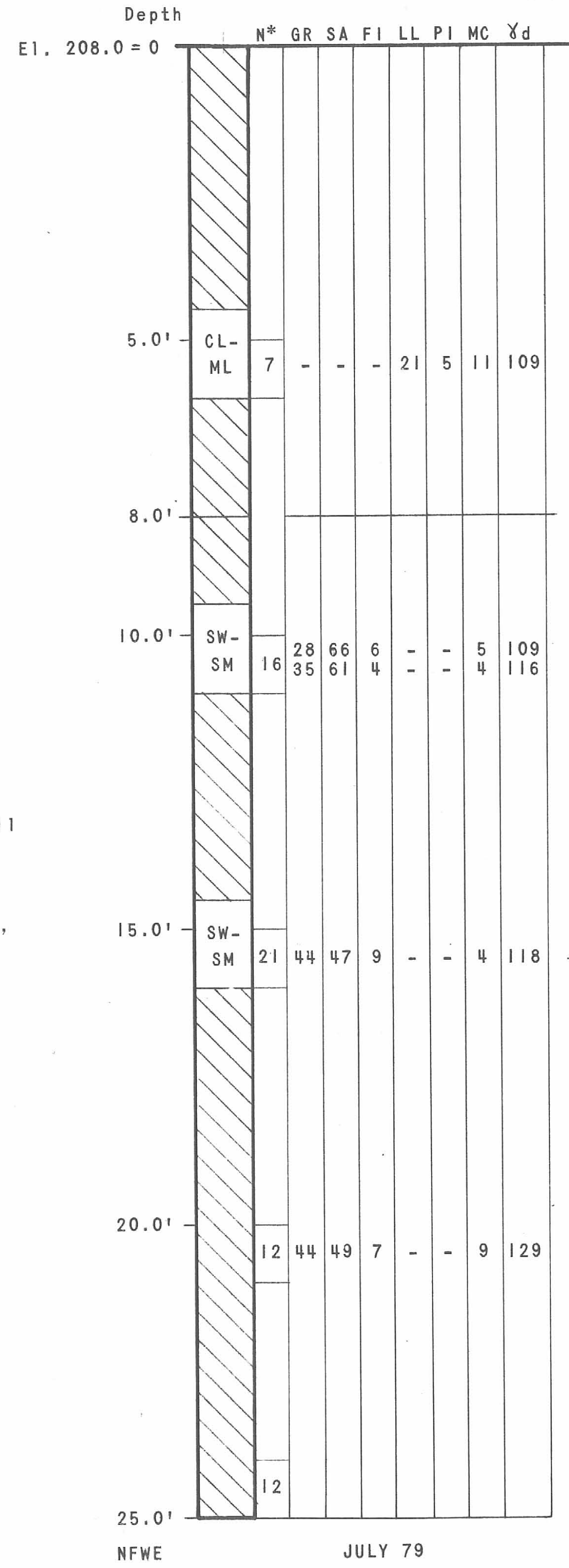
*SILTY SAND, dark yellow-brown, est. 85% well graded sand, est. 10% hard angular to subangular gravel to 1" diameter, est. 5% non-plastic fines, firm, organics at 14.0' depth

SILTY GRAVELLY SAND, brown, damp to moist, fine to coarse grained subangular sand, gravel to 1" diameter, non-plastic fines, very firm

SILTY GRAVELLY SAND, brown, moist, est. 65% medium to coarse grained subangular sand, est. 25-35% rounded gravel to 1" diameter, est. 0-10% non-plastic fines, dense

At 18.0' depth, higher % gravel

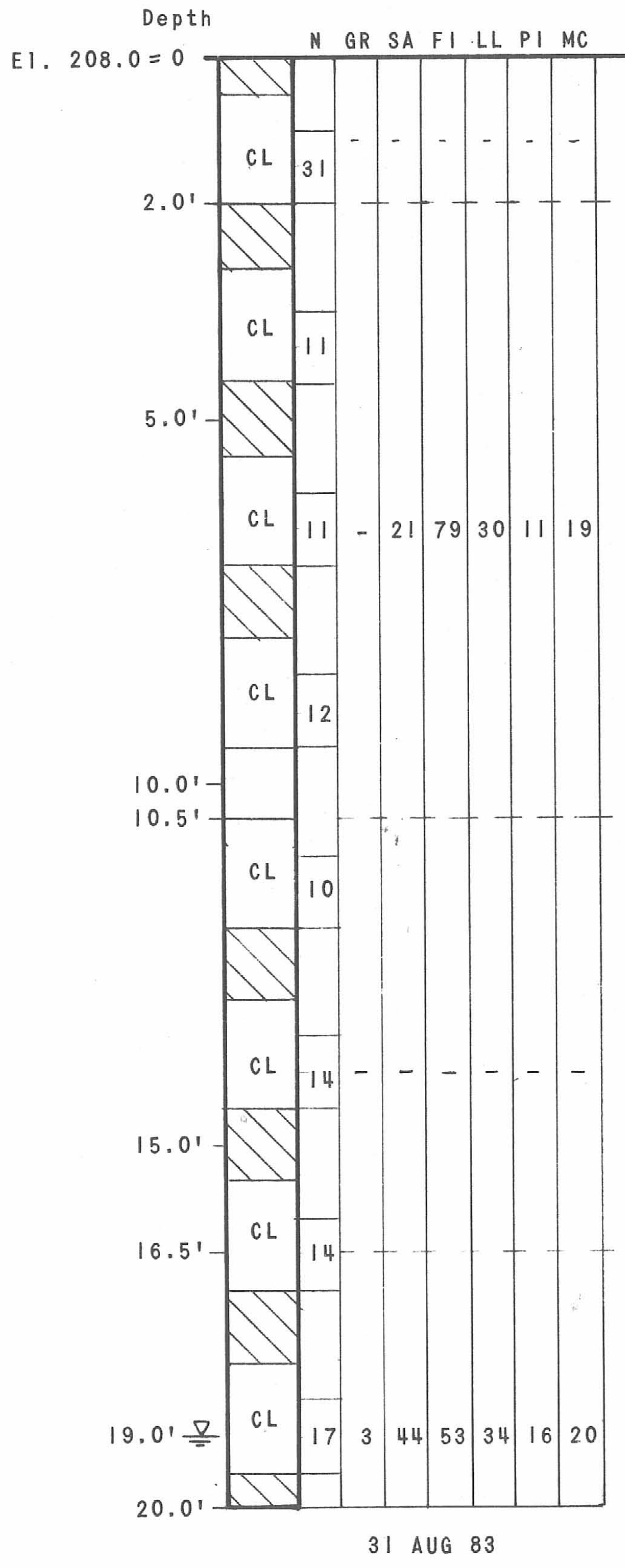
DH-3A



SILTY CLAY - CLAYEY SILT, dark brown, dry, firm, trace of fine gravel and roots to 5.0' depth, unconfined compressive strength $(Q_u) = 1.71$ tsf

SILTY GRAVELLY SAND, brown, damp, gravel to 1-1/2" diameter, firm

2F-13 (O.W.)



*SANDY CLAY, dark brown, damp, est. 70% medium plasticity fines, est. 30% sand, hard

SANDY CLAY, brown, very fine grained sand, stiff, minor amounts of organic material to 4.0' depth

*SANDY CLAY, dark yellow-brown, moist, est. 60% medium plasticity fines, est. 40% fine grained sand, stiff

SANDY CLAY, mottled gray-brown, well graded sand, gravel to 3/8" diameter, very stiff

NOTE: For legend and additional notes, see sheet 14.

REVISION	DATE	DESCRIPTION	BY	BY
△				
△				

DEPARTMENT OF THE ARMY
SACRAMENTO DISTRICT, CORPS OF ENGINEERS
SACRAMENTO, CALIFORNIA

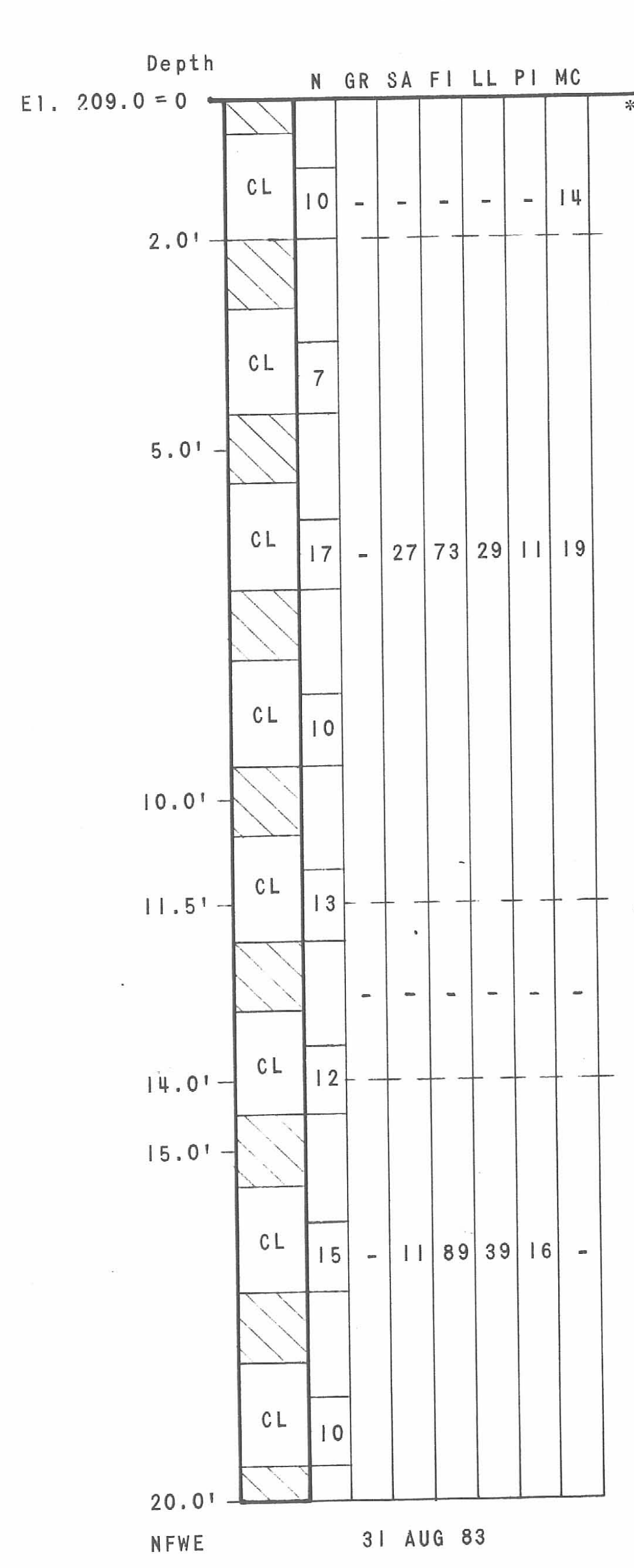
DESIGNED: K. Swanson
DRAWN: K. Wahl / J. Hayes
CHECKED: D. J. Anderson

PAJARO RIVER, CALIFORNIA
UVAS CREEK LEVEE AT GILROY
SANTA CLARA COUNTY, CALIFORNIA
LEVEE IMPROVEMENT AND CONSTRUCTION
LOGS OF BORINGS
FOUNDATION
7F-4, 2F-12, DH-3A & 2F-13
PHASE I

SUBMITTED:
CHIEF, SOIL DESIGN SECTION

DATE APPROVED: JUL 2 1 1987

SCALE: NO SCALE
SPEC. No. 7495
SHEET 17
FILE No. PA-18-4-05



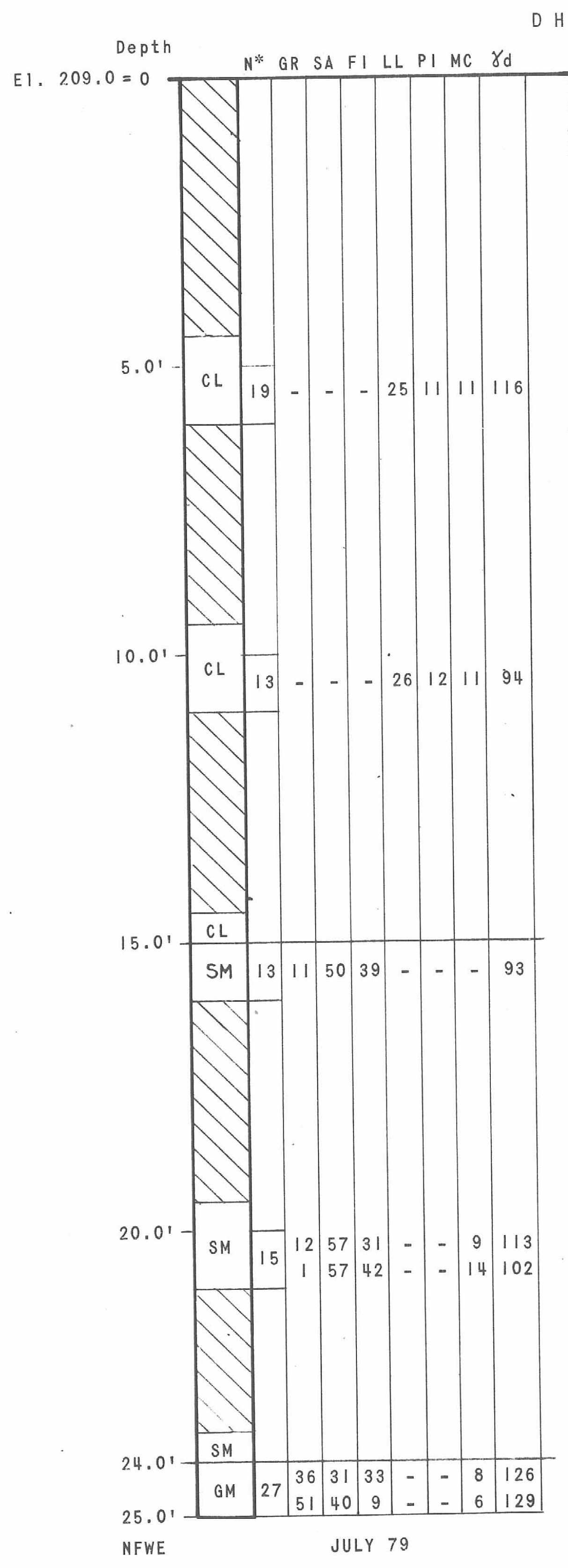
*SANDY CLAY, dark brown, est. 80% medium plasticity fines, est. 20% fine grained sand, stiff

SANDY CLAY, brown, dry to moist, very fine grained sand, firm at 3.5', very stiff at 6.0', stiff at 8.5' to 11.5'

*SANDY CLAY, dark yellow-brown, moist, est. 70% medium plasticity fines, est. 30% fine grained sand, traces of organic material, stiff

CLAY, mottled gray-brown, moist, very fine grained sand

Moisture increases at 18.0'

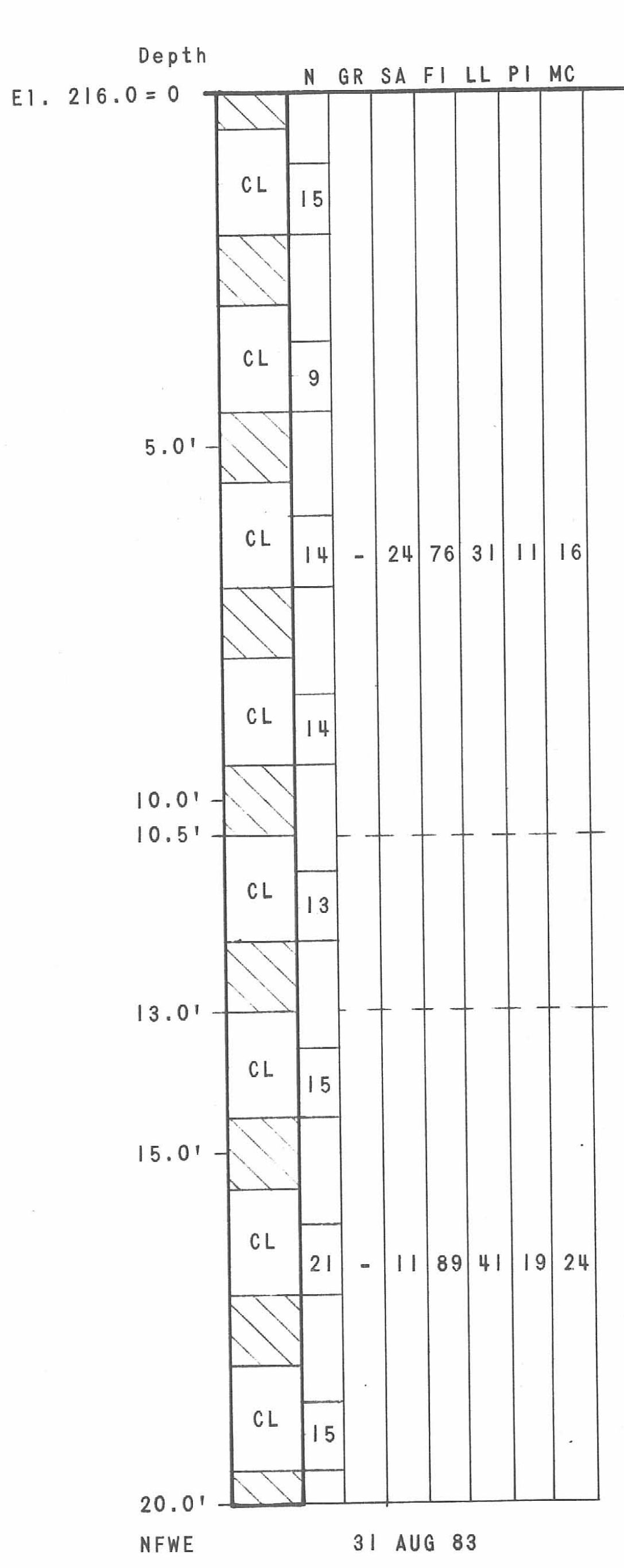


SILTY CLAY, brown to reddish brown below 8.0', dry, trace of fine sand and gravel, stiff, unconfined compressive strength (Q_u) = 10.0 tsf

Unconfined compressive strength (Q_u) = 1.83 tsf

SILTY SAND, brown, dry, trace of gravel, increasing with depth, firm

SILTY SANDY GRAVEL, brown, very fine



SANDY CLAY, brown, very fine to fine grained sand, stiff

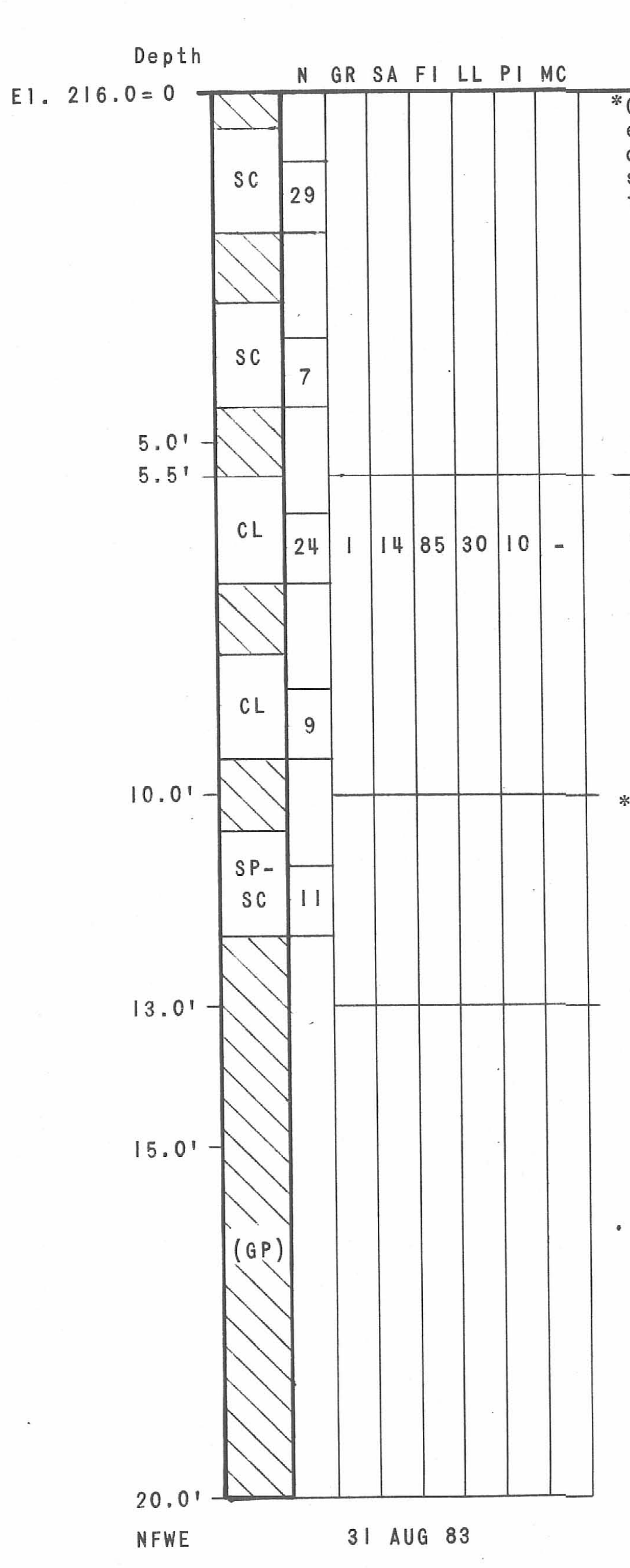
At 9.0' depth, decayed wood chips

*SANDY CLAY, dark yellow-brown, moist, est. 70% medium plasticity fines, est. 30% fine grained sand, stiff

CLAY, mottled gray-brown, very fine grained sand, stiff at 13.5' and 18.5'

At 14.0' depth, decayed wood chips

At 16.5' depth, decayed wood chips, sand fraction decreases with depth



*GRAVELLY CLAYEY SAND, dark yellow-brown, est. 40% well graded sand, est. 35% medium plasticity fines, est. 25% hard subangular gravel to 1" diameter, very firm at 1.0', loose at 3.5'

LEVEE FILL

SANDY CLAY, brown, dry to moist, very fine grained sand, very stiff at 6.0', stiff at 8.5'

*CLAYEY GRAVELLY SAND, dark yellow-brown, est. 65% well graded sand, est. 30% subangular gravel to 1" diameter, est. 5% low plasticity fines, firm

SANDY GRAVEL, brown, damp, est. 50-70% rounded gravel to 3/4" diameter, est. 30-50% medium to coarse grained subrounded grained sand

NOTE: For legend and additional notes, see sheet 14.

REVISION	DATE	DESCRIPTION	BY	BY
△				
△				

DEPARTMENT OF THE ARMY
SACRAMENTO DISTRICT, CORPS OF ENGINEERS
SACRAMENTO, CALIFORNIA

DESIGNED: P. Lee
DRAWN: K. Wahl / J. Hayes
CHECKED: D. J. Anderson

PAJARO RIVER, CALIFORNIA
UVAS CREEK LEVEE AT GILROY
SANTA CLARA COUNTY, CALIFORNIA
LEVEE IMPROVEMENT AND CONSTRUCTION

LOGS OF BORINGS

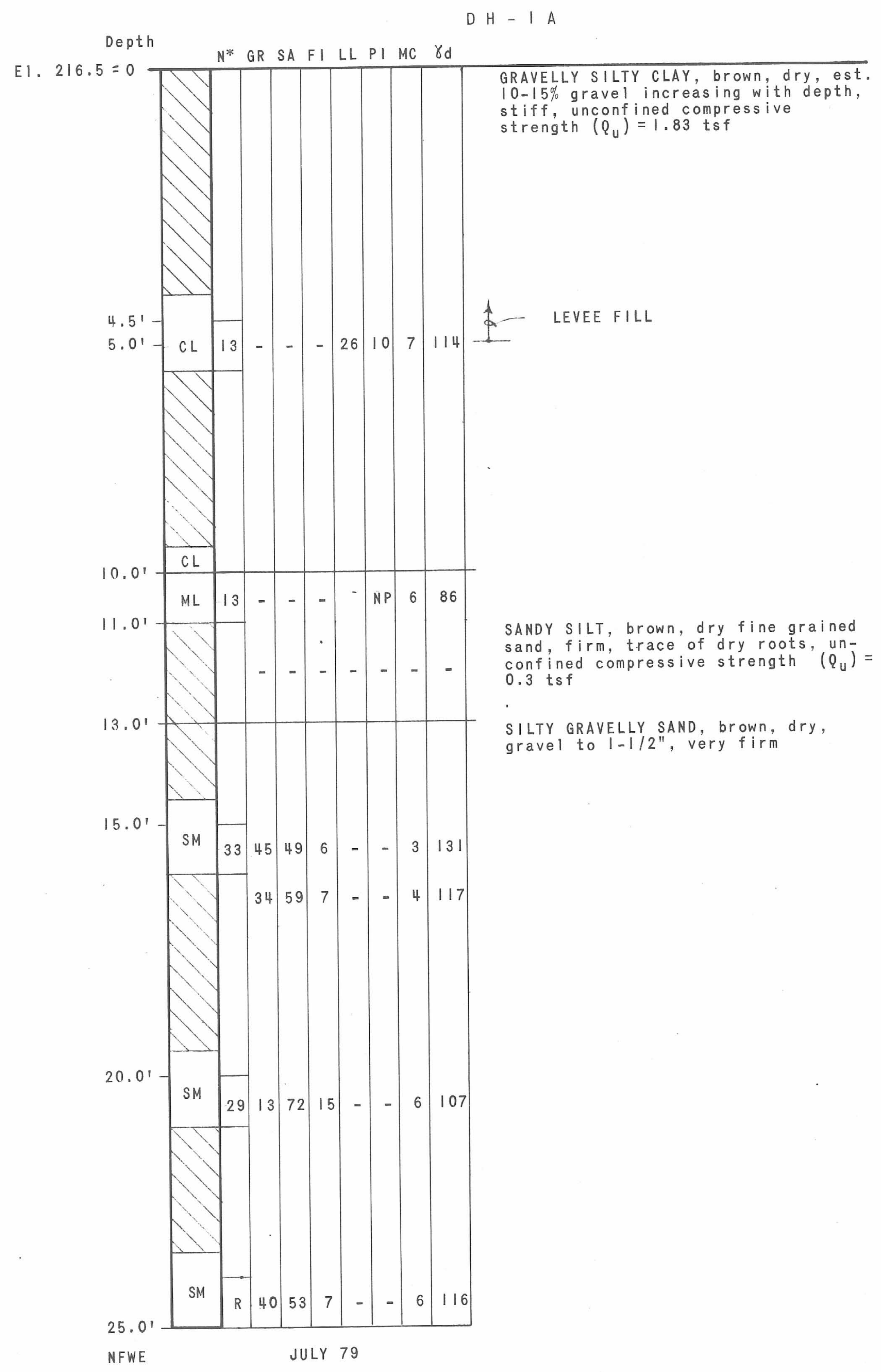
FOUNDATION
2F-14, DH-2A, 2F-15 & 2F-16
PHASE I

SUBMITTED:
CHIEF, SOIL DESIGN SECTION
DATE APPROVED: JUL 21 1987
SCALE: NO SCALE
SPEC. No. 7495
SHEET 18
FILE No. PA-18-4-05

SANTA CLARA_CA Work Maps
SANTA CLARA_CA0241

FUNCTIONAL ANALYSIS - VE PAYS

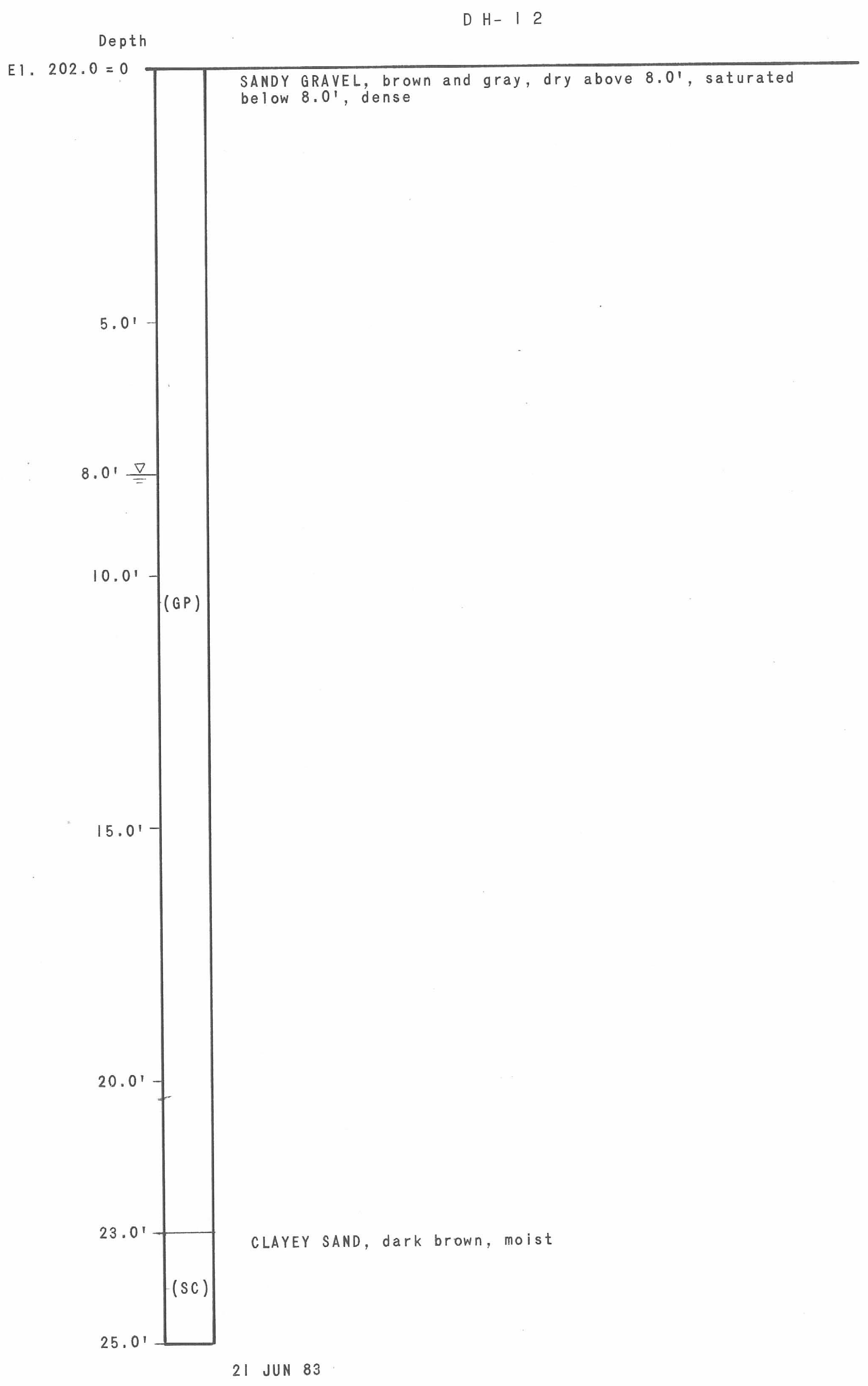
ENVIRONMENTAL ENHANCEMENT THRU ENGINEERING



GRAVELLY SILTY CLAY, brown, dry, est. 10-15% gravel increasing with depth, stiff, unconfined compressive strength (Q_u) = 1.83 tsf

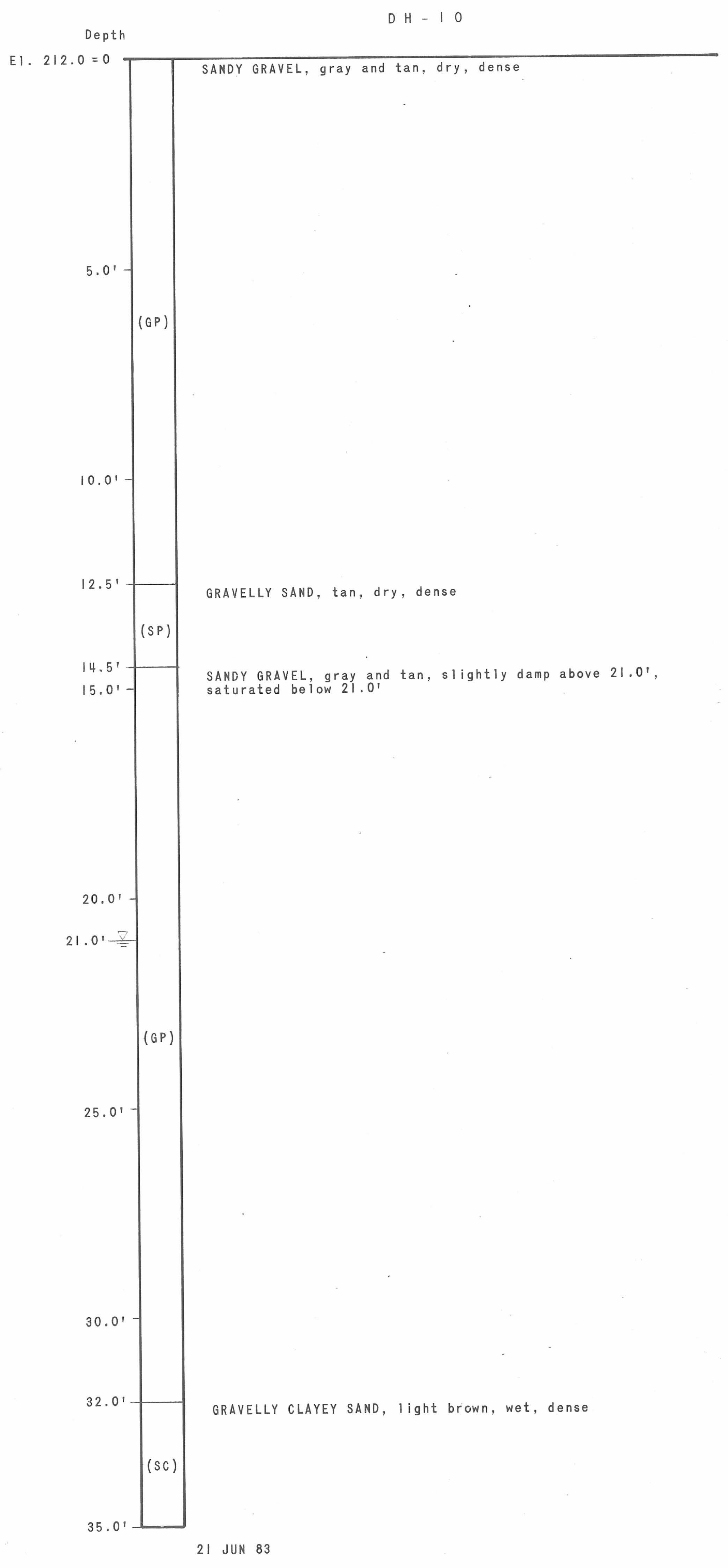
SANDY SILT, brown, dry fine grained sand, firm, trace of dry roots, unconfined compressive strength (Q_u) = 0.3 tsf

SILTY GRAVELLY SAND, brown, dry, gravel to 1-1/2", very firm



SANDY GRAVEL, brown and gray, dry above 8.0', saturated below 8.0', dense

CLAYEY SAND, dark brown, moist

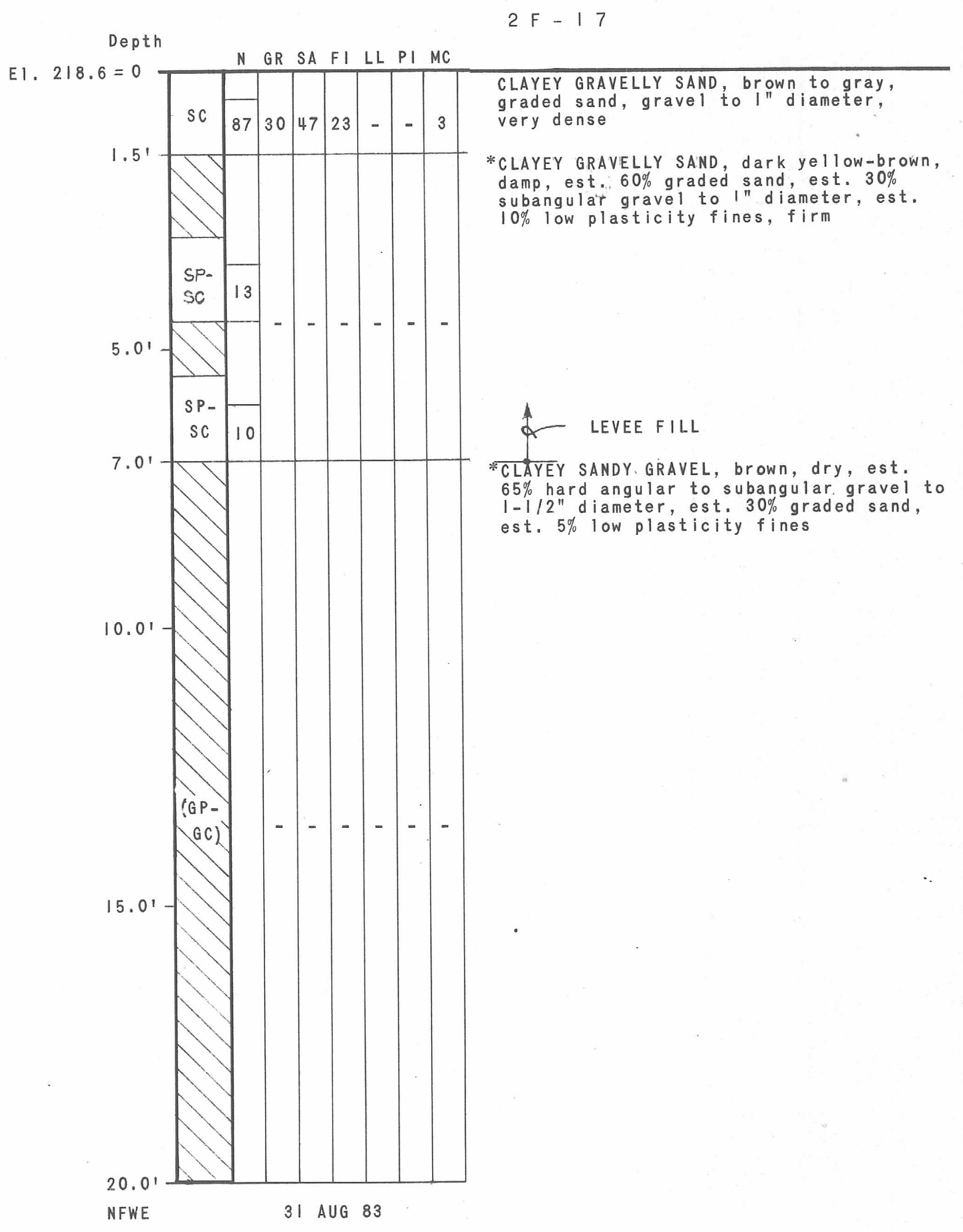


SANDY GRAVEL, gray and tan, dry, dense

GRAVELLY SAND, tan, dry, dense

SANDY GRAVEL, gray and tan, slightly damp above 21.0', saturated below 21.0'

GRAVELLY CLAYEY SAND, light brown, wet, dense



CLAYEY GRAVELLY SAND, brown to gray, graded sand, gravel to 1" diameter, very dense

*CLAYEY GRAVELLY SAND, dark yellow-brown, damp, est. 60% graded sand, est. 30% subangular gravel to 1" diameter, est. 10% low plasticity fines, firm

*CLAYEY SANDY GRAVEL, brown, dry, est. 65% hard angular to subangular gravel to 1-1/2" diameter, est. 30% graded sand, est. 5% low plasticity fines

NOTE: For legend and additional notes, see sheet 14.

REVISION	DATE	DESCRIPTION	BY	BY
△				
△				

DEPARTMENT OF THE ARMY
SACRAMENTO DISTRICT, CORPS OF ENGINEERS
SACRAMENTO, CALIFORNIA

DESIGNED: *P. Lee*
DRAWN: *K. Wahl / J. Hayes*
CHECKED: *D. J. Anderson*

PAJARO RIVER, CALIFORNIA
UVAS CREEK LEVEE AT GILROY
SANTA CLARA COUNTY, CALIFORNIA
LEVEE IMPROVEMENT AND CONSTRUCTION

LOGS OF BORINGS

FOUNDATION
DH-1A, DH-12, DH-10 & 2F-17
PHASE I

SUBMITTED:
CHIEF, SOIL DESIGN SECTION

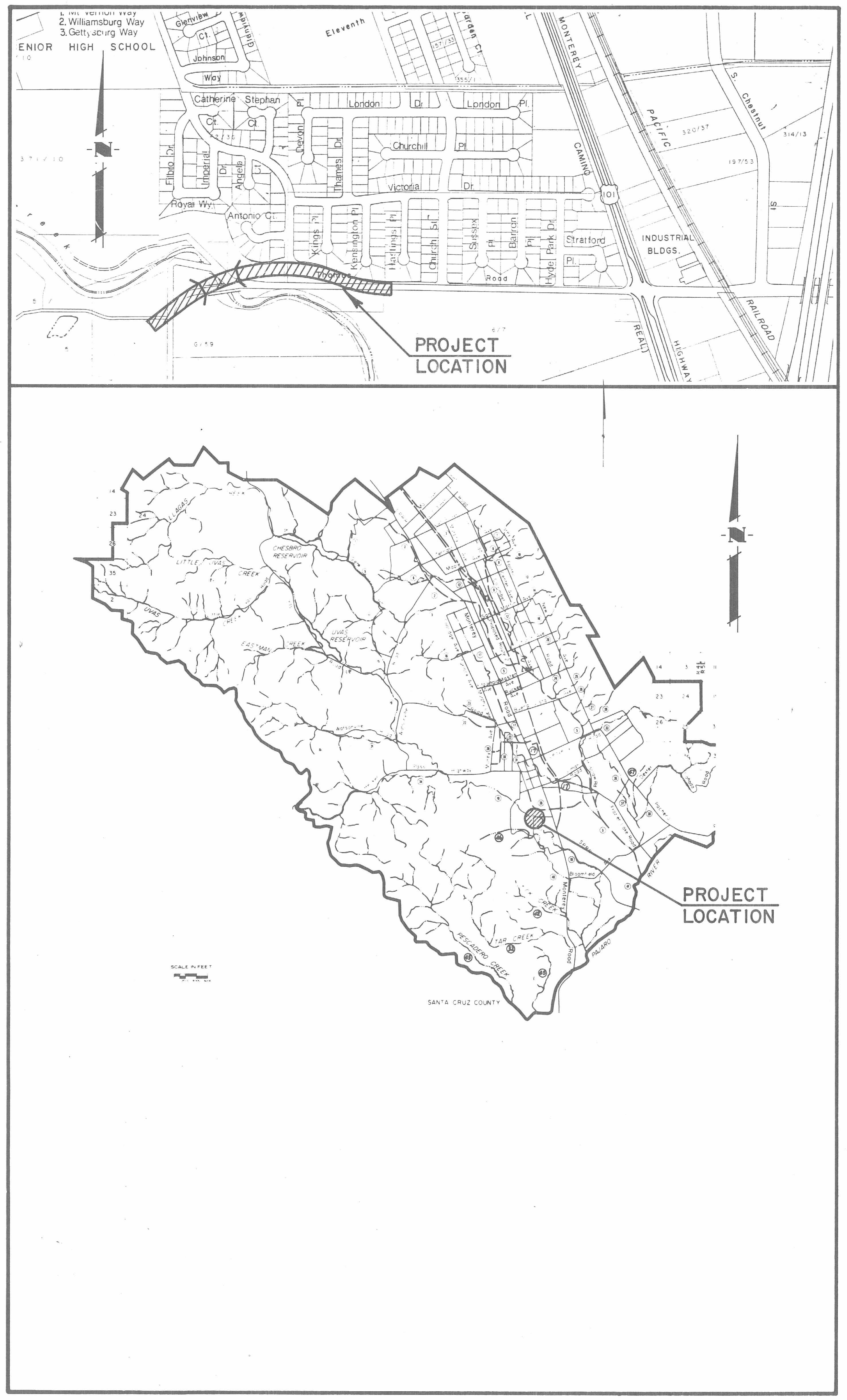
DATE APPROVED: JUL 21 1987

SCALE: NO SCALE
SPEC. No. 7495
SHEET 19
FILE No. PA-18-4-05

SAFETY PAYS

SANTA CLARA_CA Work Maps
SANTA CLARA_CA0242

ENVIRONMENTAL
ENHANCEMENT
THRU ENGINEERING



MAP AND CONSTRUCTION PLAN

FOR

THOMAS ROAD BRIDGE

AT

UVAS CREEK

GILROY CALIFORNIA

Santa Clara Valley Water District

R+G RUTH AND GOING, INC.
Civil Engineering Land Surveying
2160 LUNDY AVE. SAN JOSE, CA. 95131 (408) 943-1640

REGISTERED PROFESSIONAL ENGINEER
ROBERT A. SMITH
EXPIRES 9-30-89
No. C20821
CIVIL
STATE OF CALIFORNIA

Robert A. Smith
ROBERT A. SMITH - R.C.E. 20821
DATE: 5-24-88

SOUTH FLOOD CONTROL ZONE

PROJECT NO. 5018

INDEX

SHEET NO.	DESCRIPTION
13	MAP AND TITLE SHEET
14 & 15	GENERAL SITE PLAN
16 - 20	PLAN AND PROFILE (THOMAS ROAD)
21	INVERTED SIPHON PLAN
22	CHANNEL STONE PROTECTION PLAN
23	DETOUR PLAN
24 & 25	STREET CROSS SECTIONS
26	CREEK CROSS SECTIONS
27 & 28	DETAILS
29	BRIDGE GENERAL PLAN
30 - 42	STRUCTURAL DETAILS
43 - 47	LANDSCAPE/IRRIGATION PLANS & DETAILS
48	LOCATION OF BORROW AREA AND HAUL ROUTE
49	SOIL BORING LOGS

NOTE: SHEETS NUMBERED 1 - 12 ARE NOT A PART OF THIS CONTRACT AND ARE NOT INCLUDED IN THE CONTRACT DOCUMENTS.

SECTION OR DETAIL IDENTIFICATION NUMBER
NUMBER OF SHEET ON WHICH SECTION OR DETAIL IS DRAWN
NUMBER OF SHEET ON WHICH SECTION OR DETAIL IS TAKEN

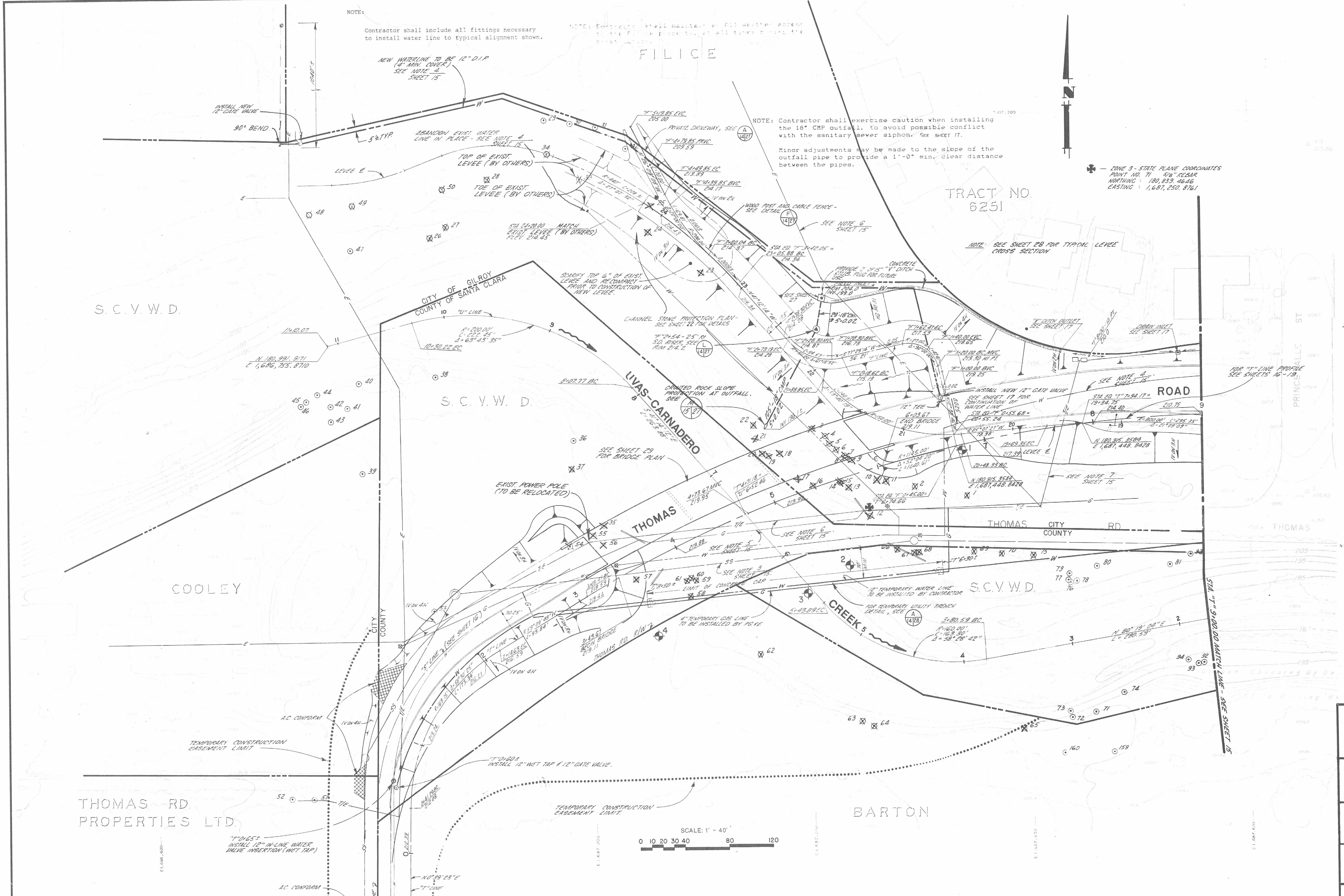
CALTRANS STANDARD PLAN SHEET NUMBER
DETAIL NUMBER

PROJECT APPROVAL:
R R Smith
FLOOD CONTROL MANAGER
DATE: 5-20-88

243-248

☆GPO 789-931-1977

SANTA CLARA_CA Work Maps
SANTA CLARA_CA0243


FILICE
TRACT NO. 6251
S.C.V.W.D.
S.C.V.W.D.
S.C.V.W.D.
COOLEY
THOMAS RD PROPERTIES LTD
BARTON
CITY OF GILROY
COUNTY OF SANTA CLARA
UVAS-CARNADERO
THOMAS
CREEK
ROAD
THOMAS CITY COUNTY RD
PRINCEVALLE ST
N
NEW WATERLINE TO BE 12" D.I.P. (4' MIN. COVER) SEE NOTE 4 SHEET 15
INSTALL NEW 12" GATE VALVE
90° BEND
5'± TYP.
ABANDON EXIST. WATER LINE IN PLACE - SEE NOTE 4 SHEET 15
TOP OF EXIST. LEVEE (BY OTHERS)
TOE OF EXIST. LEVEE (BY OTHERS)
LEVEE ℄
STA 24+20.00 MATCH EXIST. LEVEE (BY OTHERS) ELEV. 214.45
SCARIFY TOP 6" OF EXIST. LEVEE AND RECOMPACT PRIOR TO CONSTRUCTION OF NEW LEVEE.
CHANNEL STONE PROTECTION PLAN - SEE SHEET 22 FOR DETAILS
"F"2+54 - 25' Rt. S.D. RISER, SEE L 14/27 RIM 214.2
GROUTED ROCK SLOPE PROTECTION AT OUTFALL. SEE M 15/27
SEE SHEET 29 FOR BRIDGE PLAN
EXIST. POWER POLE (TO BE RELOCATED)
"F"5+19.85 EVC 205.00
PRIVATE DRIVEWAY, SEE A 14/27
"F"4+79.85 PRVC 209.59
"F"4+49.85 EC 213.89
"F"4+39.85 BVC 214.17
WOOD POST AND CABLE FENCE - SEE DETAIL F 14/27
SEE NOTE 6 SHEET 15
"F"3+80.04 BC 214.37
STA. EQ. "F"3+42.05 = 23+05.88 BC 214.34
PROVIDE 2' OF 15" STUB. PLUG FOR FUTURE USE.
FIELD INLET RIM 204.0 INV. 199.0
CONCRETE "V" DITCH
SEE SHEET 27
29'-18" CMP @ S=0.02
105'-18" CMP S=0.02
INV. 196.1±
"V" DITCH OUTLET SEE SHEET 17
DRAIN INLET SEE SHEET 17
"T"8+00 - HI PT. 210.0
INSTALL NEW 12" GATE VALVE
SEE SHEET 17 FOR CONTINUATION OF WATER LINE
12" TEE
6+03.67 END BRIDGE 219.11
STA. EQ. "F"0+55.68 = 20+55.24
STA. EQ. "T"7+94.17 = 19+34.75
N 180,915.3584 E 1,687,448.8428
SEE NOTE 4 SHEET 15
SEE NOTE 7 SHEET 15
FOR "T" LINE PROFILE SEE SHEETS 16-19.
STA. EQ. "F"0+45.00 = "T"6+74.66
"T"4+71.18 = "U"6+52.46
4+73.67 MVC 219.95
SEE NOTE 5 SHEET 15
SEE NOTE 3 SHEET 15
SEE NOTE 6 SHEET 15
LIMIT OF CONCRETE CAP
"T"3+50±
3+43.67 BEGIN BRIDGE 219.11
THOMAS RD. R/W
4" TEMPORARY GAS LINE TO BE INSTALLED BY PG&E
12" TEMPORARY WATER LINE TO BE INSTALLED BY CONTRACTOR
FOR TEMPORARY UTILITY TRENCH DETAIL, SEE A 14/28
"T"6+30±
3+80.59 BC R=160.00' L=163.30' Δ=58°28'42"
N 80°19'04"E L=280.59'
STA. "T" 9+00.00 MATCH LINE - SEE SHEET 15
"S" LINE (SEE SHEET 16)
"T" LINE
A.C. CONFORM
TEMPORARY CONSTRUCTION EASEMENT LIMIT
"T"0+60± INSTALL 12" WET TAP & 12" GATE VALVE.
"T"0+65± INSTALL 12" IN-LINE WATER VALVE INSERTION (WET TAP)
N0°39'23"E
"T" LINE
"S" LINE
A.C. CONFORM
SCALE: 1" = 40'
0 10 20 30 40 80 120

NOTE:

Contractor shall include all fittings necessary to install water line to typical alignment shown.

NOTE: Contractor shall exercise caution when installing the 18" CMP outfall, to avoid possible conflict with the sanitary sewer siphon. SEE SHEET 17.

Minor adjustments may be made to the slope of the outfall pipe to provide a 1'-0" min. clear distance between the pipes.

NOTE: SEE SHEET 28 FOR TYPICAL LEVEE CROSS SECTION

✠ — ZONE 3 - STATE PLANE COORDINATES
POINT NO. 71 5/8" REBAR
NORTHING : 180,839.4646
EASTING : 1,687,250.8761

ENVIRONMENTAL ENHANCEMENT THRU ENGINEERING

LEGEND

EXISTING **PROPOSED** **DESCRIPTION**

- MATCH LINE
- CENTERLINE
- ROADWAY RIGHT-OF-WAY
- PROPERTY LINE
- CREEK CENTERLINE ("U" LINE)
- TEMPORARY COUNTOUR (DETOUR ROAD)
- P.C.C. CURB AND CUTTER
- A.C. BERM
- P.C.C. SIDEWALK
- SLOPED BANK
- TEMPORARY SLOPED BANK (DETOUR ROAD)
- 0.025 — SLOPE GRADE
- DIRECTION OF FLOW
- EXIST. TREE / TREE TO BE REMOVED
- WATER LINE / VALVE
- SANITARY SEWER LINE
- SANITARY MANHOLE
- SANITARY LIFT STATION
- PAVEMENT TO BE REMOVED
- FIELD INLET
- OUTFALL RISER
- R26A(S) — SIGN / TYPE (REF: CALTRANS STD. TRAFFIC MANUAL FOR ALL STRIPING & SIGNING)
- ELECTROLIER
- LOCATION OF SOIL BORING

ABBREVIATIONS

BC	BEGINNING OF CURVE
EC	END OF CURVE
BVC	BEGIN VERTICAL CURVE
MVC	MID-POINT VERTICAL CURVE
EVC	END VERTICAL CURVE
GB	GRADE BREAK
SS	SANITARY SEWER
T	TELEPHONE
E	ELECTRIC
TOB	TOP OF BANK
TD	TOP OF BRIDGE DECK
TB	TOP OF A.C. BERM
PV	PAVEMENT
"T" LINE	THOMAS RD. ℄
N.I.C.; N/C	NOT IN CONTRACT
"P" LINE	PRINCEVALLE ST. ℄
"U" LINE	UVAS CREEK ℄
"S" LINE	PHASE I THOMAS RD. ℄ (STA. "T" 99+41.29 TO "T" 3+08.47)
"F" LINE	LEVEE BASE LINE (STA. "T" 6+74.66 TO FILICE PROPERTY)
T.O.S.P.	TOP OF STONE PROTECTION

TREE NO.	DESCRIPTION	REMARKS
1	5" & 6" Oak	To Be Removed
2	6" & 9" Oak	To Be Removed
3	13" Eucalyptus	To Be Removed
4	6" Eucalyptus	To Be Removed
5	9" Eucalyptus	To Be Removed
6	8" & 11" Eucalyptus	To Be Removed
7	11" Eucalyptus	To Be Removed
8	11" Eucalyptus	To Be Removed
9	13" Eucalyptus	To Be Removed
10	5 - 8" Eucalyptus	To Be Removed
11	13" Eucalyptus	To Be Removed
12	13" Eucalyptus	To Be Removed
13	5 - 8" Eucalyptus	To Be Removed
14	9" Eucalyptus	To Be Removed
15	8" Eucalyptus	To Be Removed
16	3 - 16" Black Walnut	To Be Removed
17	3 - 30" Eucalyptus	To Be Removed
18	19" Eucalyptus	To Be Removed
19	11" Eucalyptus	To Be Removed
20	17" Eucalyptus	To Be Removed
21	11" Eucalyptus	To Be Removed
22	28" Black Walnut	To Be Removed
23	30" English Walnut	To Be Removed
24	22" English Walnut	To Be Removed
25	16" English Walnut	To Be Removed
26	2 - 8" Oak	To Be Removed
27	10" Oak	To Be Removed
28	16" English Walnut	To Be Removed
29	19" English Walnut	To Remain
30	26" English Walnut	To Remain
31	17" English Walnut	To Remain
32	16" English Walnut	To Remain
33	3 - 10" English Walnut	To Be Removed (N.I.C.)
34	6" Pine	To Be Removed (N.I.C.)
35	9" Tree	To Be Removed
36	12" Oak	To Remain
37	9" Oak	To Be Removed
38	15" Black Walnut (Base)	To Remain
39	64" Oak	To Remain
40	38" Oak	To Remain
41	10" & 16" Oak	To Remain
42	12" Oak	To Remain
43	2 - 12" Oak	To Remain
44	6" Oak	To Remain
45	11" Oak	To Remain
46	9" Oak	To Remain
47	3 - 38" Sycamore	To Remain
48	23" English Walnut	To Be Removed (N.I.C.)
49	29" English Walnut	To Be Removed (N.I.C.)
50	22" English Walnut	To Be Removed
51	5 - 8" Pine	To Remain
52	9" Pine	To Remain
53	9" Oak	To Remain
54	8" Oak (Base)	To Be Removed
55	6" Oak	To Be Removed
56	6" & 2 - 7" Oak	To Be Removed
57	7" Oak	To Be Removed
58	2 - 17" & 2 - 20" Oak	To Be Removed
59	17" & 20" Sycamore	To Be Removed
60	10" Sycamore	To Be Removed
61	12" Sycamore	To Be Removed
62	36" Oak	To Be Removed
63	9" Oak	To Be Removed
64	9" Oak	To Be Removed
65	13" Oak	To Be Removed
66	9" Oak	To Be Removed
67	8" Oak	To Be Removed
68	10" Oak	To Be Removed
69	20" English Walnut	To Be Removed
70	20" English Walnut	To Be Removed
71	2 - 30" Oak	To Remain
72	18" Oak	To Remain
73	22" Oak	To Remain
74	9" Oak	To Remain
75	13" Black Walnut (Dead)	To Be Removed
76	8" & 11" Sycamore	To Remain
77	2 - 9" Sycamore	To Remain
78	18" Sycamore	To Remain
79	2 - 10" Sycamore	To Remain
80	60" Eucalyptus	To Remain
81	36" & 60" Sycamore	To Remain
82	18" Black Walnut	To Remain
83	2 - 25" & 20" Sycamore	To Remain
84	2 - 10" & 17" Black Walnut	To Remain
85	2 - 24" & 36" Sycamore	To Remain
86	10", 13" & 17" Oak	To Remain
87	30" Oak	To Remain
88	18" Oak	To Remain
89	30" Oak	To Remain
90	12" Oak	To Remain
91	28" Oak (Base)	To Remain
92	22" Sycamore	To Remain
93	30" Sycamore	To Remain
94	18", 21" & 24" Sycamore	To Remain
95	11", 19" & 31" Sycamore	To Remain
96	8" Black Walnut	To Remain
97	22" Sycamore	To Remain
98	2 - 10" Black Walnut	To Remain
99	24" Sycamore	To Remain
100	9" Black Walnut	To Remain

APPROVED:

DATE: March 29, 1988

Norman S. Allen
NORMAN S. ALLEN - R.C.E. 26092
CITY ENGINEER - CITY OF GILROY
REG. EXPIRES: 3-31-90.

DRWN.: TL
CHKD.: SDL, DVR
DEPT.: CIVIL

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JOB. # 17273-130

Robert A. Smith
ROBERT A. SMITH RCE 20821 EXP. 9-30-89
DATE: 5-24-88

Santa Clara Valley Water District

ACCEPTED BY DISTRICT: DATE 5/25/88

PROJECT ENGINEER R.C.E. NO. 25413
Bruce Wilson
DIVISION ENGINEER R.C.E. NO. 15851

REVISION	DATE	DESCRIPTION	BY	BY
△				
△				

DESIGNED:

DRAWN:

CHECKED:

THOMAS ROAD AT UVAS CREEK
GENERAL SITE PLAN

SUBMITTED:

DATE APPROVED

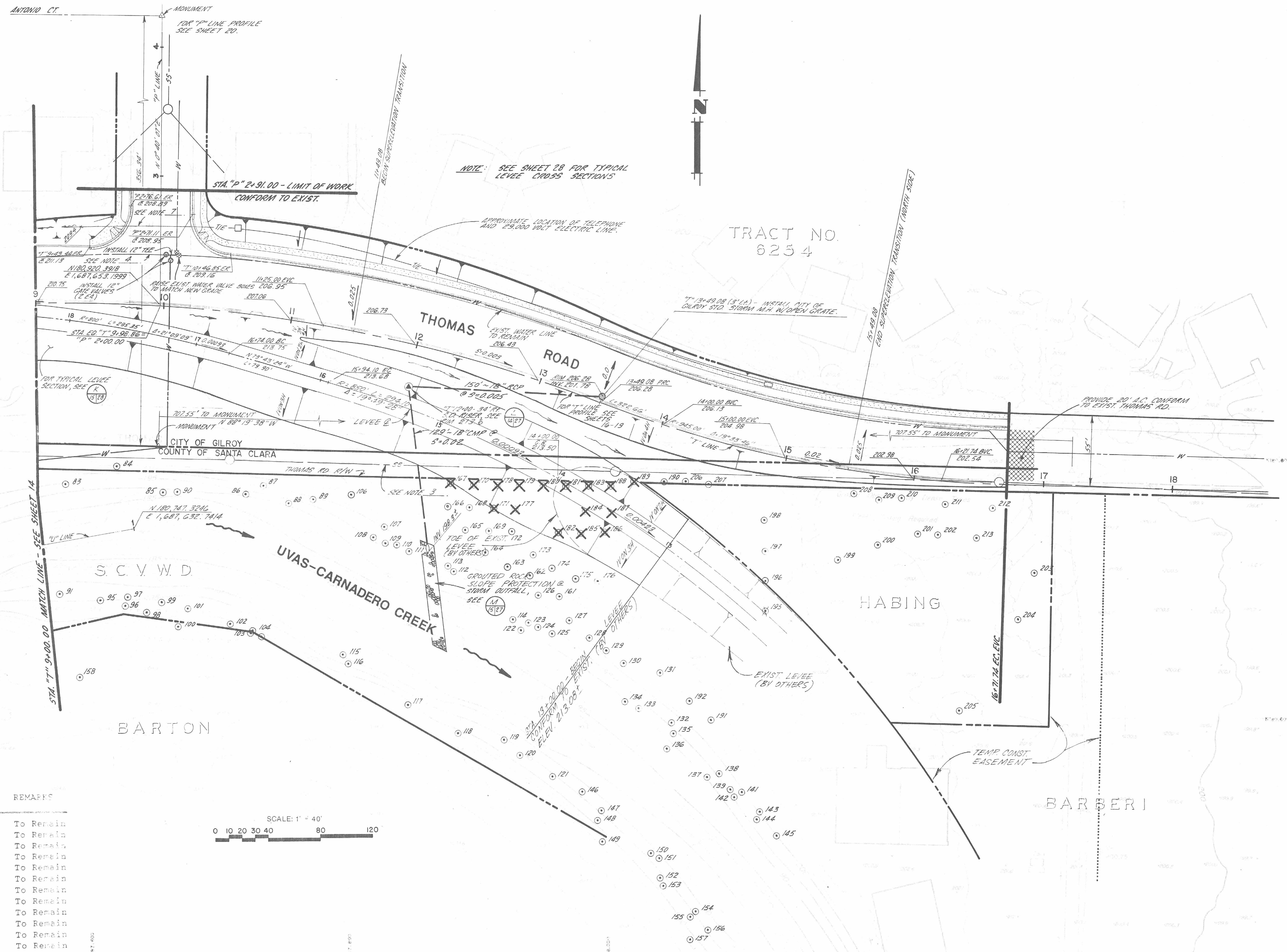
SCALE AS SHOWN
SPEC. No.
SHEET 14
FILE No.

JOB NO. 873702
DATE OF PHOTOGRAPHY 8-25-87
SCALE 1"=40'

AERO-GEODETIC CORPORATION
CONSULTING PHOTOGRAMMETRIC ENGINEERS
1600 WARBURTON AVENUE SANTA CLARA, CALIFORNIA 95050

SANTA CLARA_CA Work Maps
SANTA CLARA_CA0244

FUNCTION ANALYSIS - VE PAYS



ANTONIO CT.
MONUMENT
FOR "P" LINE PROFILE SEE SHEET 20.
"P" LINE
N 0°40'07"E
336.34'
STA. "P" 2+91.00 - LIMIT OF WORK CONFORM TO EXIST.
NOTE: SEE SHEET 28 FOR TYPICAL LEVEE CROSS SECTIONS
11+49.08 BEGIN SUPERELEVATION TRANSITION
"P"2+76.61 ER ℄ 208.89
SEE NOTE 7
"P"2+71.11 ER ℄ 208.95
"T"9+43.44 ER ℄ 211.13
INSTALL 12" TEE
SEE NOTE 4
N180,920.3918 E1,687,653.1999
INSTALL 12" GATE VALVES (2 EA.)
"T"10+46.85 ER ℄ 209.16
RAISE EXIST. WATER VALVE BOXES TO MATCH NEW GRADE
11+25.00 EVC 206.95
207.06
210.75
APPROXIMATE LOCATION OF TELEPHONE AND 29,000 VOLT ELECTRIC LINE.
T/E
R=800' L=295.35'
STA. EQ. "T" 9+98.86 = "P" 2+00.00
Δ=21°09'09"
0.00093
16+74.00 BC 213.75
N.73°43'24"W L=79.90'
206.73
THOMAS ROAD
EXIST. WATER LINE TO REMAIN 206.43
S=0.003
15+94.10 EC 213.68
R=850' L=294.10 Δ=19°19'28"
150'~18" RCP @ S=0.005
RIM 206.28 INV. 201.78
13+49.08 PRC 206.28
FOR "T" LINE PROFILE SEE SHEETS 16-19
L=322.66'
FOR TYPICAL LEVEE SECTION, SEE K 15/28
707.55' TO MONUMENT N 88°19'38"W
MONUMENT
LEVEE ℄
"T"12+00-34'RT. S.D. RISER, SEE L 14/27 RIM 213.6
129'~18"CMP @ S=0.02
14+00.00 G.B. 213.50
CITY OF GILROY
COUNTY OF SANTA CLARA
THOMAS RD R/W
SEE NOTE 3
N 180,747.3246 E 1,687,632.7414
"U" LINE
STA. "T" 9+00.00 MATCH LINE - SEE SHEET 14
TRACT NO. 6254
"T"13+49.08 (3' Lt.) - INSTALL CITY OF GILROY STD. STORM M.H. W/OPEN GRATE.
15+49.08 END SUPERELEVATION TRANSITION (NORTH SIDE)
14+00.00 BVC 206.13
15+00.00 EVC 204.98
R=945.00' Δ=19°33'46"
"T" LINE
0.02
0.025
202.98
16+21.74 BVC 202.54
707.55' TO MONUMENT
PROVIDE 20' A.C. CONFORM TO EXIST. THOMAS RD.
55'
N
S.C.V.W.D.
UVAS-CARNADERO CREEK
INV. 198.3±
TOE OF EXIST. LEVEE (BY OTHERS)
GROUTED ROCK SLOPE PROTECTION @ STORM OUTFALL, SEE M 15/27
0.00423
STA. 13+00.00 - BEGIN LEVEE CONFORM TO EXIST. (BY OTHERS) ELEV. 213.08±
EXIST. LEVEE (BY OTHERS)
HABING
BARTON
BARBERI
TEMP. CONST. EASEMENT
16+71.74 EC EVC
SCALE: 1" = 40'
0 10 20 30 40 80 120

ENVIRONMENTAL ENHANCEMENT THRU ENGINEERING

UTILITY NOTES

1. Existing underground lines, appurtenances and facilities are shown for information only. Contractor shall exercise all necessary caution to avoid damage to any existing facilities which are to remain in place, whether or not such facilities are shown on the plans, and shall bear full responsibility for any damage thereto. No warranty is given as to the completeness and accuracy of such facility information.

2. Contractor shall expose existing utilities and verify line size, location and elevation, prior to construction.

3. Contractor shall relocate the sanitary sewer main, as shown on Sheets 16 to 18 and 21, prior to the demolition of the existing bridge.

4. The Contractor shall relocate the existing water main, as shown on Sheets 14 and 15, prior to demolition of the bridge and installation of any new water main. The temporary water line relocation, as well as the connection of the new water main, shall be completed without interruption of water service. The steps for relocation shall be as follows:

   A. Close the valve east of the existing bridge.

   B. Close both valves at the intersection of Princevalle and Thomas Road.

   C. Install the 12" Tee at the intersection of Princevalle and Thomas Road.

   D. Install the 12" wet tap and valve at Station "T" 0+50±.

   E. Connect temporary water main between the two 12" valves, as shown on Sheets 14 and 15.

   F. Install a 12" in-line valve insertion wet tap at Station "T" 0+55±.

   G. Close the new 12" valve at Station "T" 0+55± and the existing 12" valve 1,040'± north of the high school tennis courts.

   Upon completion of the new bridge and after all the new water main is in place, disinfected, pressure checked and operational, the Contractor shall abandon the temporary water line.

5. The gas main shall be temporarily relocated by P G & E to accommodate the bridge demolition. See Sheets 39 and 40 of these plans and P G & E's relocation plans for final relocation. Contractor shall coordinate with PG&E, as required.

6. The overhead electric and telephone facilities shall be relocated by P G & E and Contel to accomodate the bridge demolition and bridge construction. See Sheet 39 of these plans and P G & E and Contel drawings for the final relocation. Contractor shall coordinate with these utility companies as required.

7. Existing underground telephone and electric facilities shall be relocated by PG&E and Contel to accomodate construction. Contractor shall coordinate with these utility companies, as required.

8. Contractor shall use extreme care when digging the electrolier foundations due to the proximity of the water main, and underground telephone and electric facilities.

TREE NO.	DESCRIPTION	REMARKS
101	26" Oak	To Remain
102	10" Oak	To Remain
103	16" Oak	To Remain
104	9" Oak	To Remain
105	2 - 15" & 2 - 19" Oak	To Remain
106	3 - 21" Black Walnut	To Remain
107	19" Oak	To Remain
108	15" Oak	To Remain
109	19" Oak	To Remain
110	11" Black Walnut	To Remain
111	2 - 9" & 24" Oak	To Remain
112	28" Oak	To Remain
113	11" & 12" Oak	To Remain
114	84" ± Sycamore	To Remain
115	18" & 26" Oak	To Remain
116	18" & 24" Oak	To Remain
117	13" Black Walnut	To Remain
118	8" Oak	To Remain
119	23" Black Walnut	To Remain
120	26" Oak	To Remain
121	18" & 24" Oak	To Remain
122	12" Eucalyptus	To Remain
123	16" Oak	To Remain
124	10" Oak	To Remain
125	9", 12" & 14" Black Walnut	To Remain
126	11" Black Walnut	To Remain
127	24" Black Walnut	To Remain
128	15" Black Walnut	To Remain
129	10" Black Walnut	To Remain
130	8" & 9" Black Walnut	To Remain
131	25" English Walnut	To Remain
132	27" Sycamore	To Remain
133	13" Sycamore	To Remain
134	42" Sycamore	To Remain
135	12" Sycamore	To Remain
136	13" Pepper	To Remain
137	15" Eucalyptus	To Remain
138	19" Oak	To Remain
139	14" Oak	To Remain
141	25" Oak	To Remain
142	8" & 12" Oak	To Remain
143	25" Oak	To Remain
144	23" Oak	To Remain
145	14", 17" & 20" Oak	To Remain
146	23" Oak	To Remain
147	16", 2 - 18" & 24" Oak	To Remain
148	13" & 14" Black Walnut	To Remain
149	8" Oak	To Remain
150	10", 16" & 18" Black Walnut	To Remain

TREE NO.	DESCRIPTION	REMARKS
151	12" Oak	To Remain
152	13" Black Walnut	To Remain
153	4 - 12", 13" & 15" Oak	To Remain
154	39" Oak	To Remain
155	9" Buckeye	To Remain
156	19" Oak	To Remain
157	20" Oak	To Remain
158	24" Black Walnut	To Remain
159	20" English Walnut	To Remain
160	18" Black Walnut	To Remain
161	10" English Walnut	To Remain
162	18" English Walnut	To Remain
163	11" English Walnut	To Remain
164	11" English Walnut	To Remain
165	10" English Walnut	To Remain
166	12" English Walnut	To Remain
167	13" English Walnut	To Be Removed
168	14" English Walnut	To Remain
169	15" English Walnut	To Remain
170	12" English Walnut	To Be Removed
171	2 - 12" English Walnut	To Be Removed
172	11", 13" & 14" English Walnut	To Remain
173	14" English Walnut	To Remain

TREE NO.	DESCRIPTION	REMARKS
174	11" English Walnut	To Remain
175	12" English Walnut	To Remain
176	17" English Walnut	To Remain
177	13" English Walnut	To Be Removed
178	16" English Walnut	To Be Removed
179	14" English Walnut	To Be Removed
180	18" English Walnut	To Be Removed
181	16" English Walnut	To Be Removed
182	17" English Walnut	To Be Removed
183	18" English Walnut	To Be Removed
184	15" English Walnut	To Be Removed
185	16" English Walnut	To Be Removed
186	14" English Walnut	To Be Removed
187	10" Cottonwood	To Be Removed
188	2 - 10" & 13" Black Walnut	To Be Removed
189	11", 15" & 18" Black Walnut	To Be Removed
190	16" English Walnut	To Remain
191	13" English Walnut	To Remain
192	26" Black Walnut	To Remain
195	3 - 12" English Walnut	To Be Removed (N.I.C.)
196	2 - 12" & 13" English Walnut	To Remain
197	22" English Walnut	To Remain
198	26" English Walnut	To Remain

TREE NO.	DESCRIPTION	REMARKS
199	23" English Walnut	To Remain
200	39" Redwood	To Remain
201	35" Palm	To Remain
202	36" Palm	To Remain
203	42" Bay	To Remain
204	9" Pepper	To Remain
205	31" Black Walnut	To Remain
206	13" English Walnut	To Remain
207	15" English Walnut	To Remain
208	12" Olive	To Remain
209	2 - 48" Black Walnut	To Remain
210	27" Redwood	To Remain
211	17" & 25" English Walnut	To Remain
212	37" Pepper	To Remain
213	36" Cedar	To Remain

DRWN.: TL
CHKD.: SDL, DVR
DEPT.: CIVIL

R+G RUTH AND GOING, INC.
Civil Engineering Land Surveying
2180 LUNDY AVE. SAN JOSE, CA. 95131 (408) 943-1840

JOB.# 17273-130

Robert A. Smith
ROBERT A. SMITH RCE 20821 EXP. 9-30-89
DATE: 5-24-88

Santa Clara Valley Water District

ACCEPTED BY DISTRICT: DATE 5/25/88

PROJECT ENGINEER R.C.E. NO. 25413
Bruce Wilson
DIVISION ENGINEER R.C.E. NO. 15851

REVISION	DATE	DESCRIPTION	BY	BY
△				
△				

DESIGNED:
DRAWN:
CHECKED:

THOMAS ROAD AT UVAS CREEK
GENERAL SITE PLAN

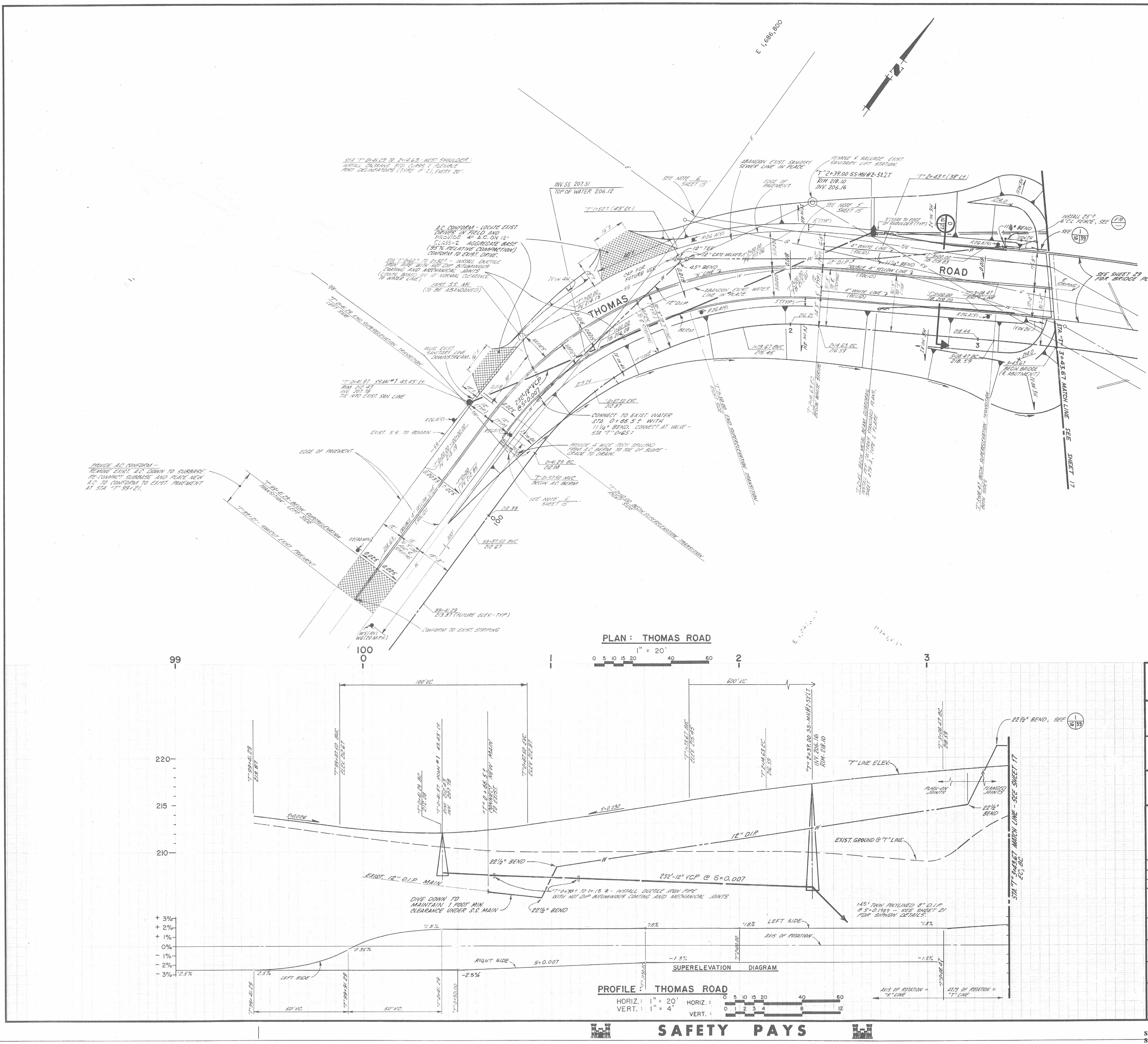
SUBMITTED:
DATE APPROVED
SCALE AS SHOWN
SPEC. No.
SHEET 15
FILE No.

SAFETY PAYS

JOB NO. 873702
DATE OF PHOTOGRAPHY 8-25-87
SCALE 1"=40'

AERO-GEODETIC CORPORATION
CONSULTING PHOTOGRAMMETRIC ENGINEERS
1600 WARBURTON AVENUE, SANTA CLARA, CALIFORNIA 95050

ENVIRONMENTAL ENHANCEMENT THRU ENGINEERING


E 1,686,800
STA "T" 0+41.29 TO 2+14.63 - WEST SHOULDER: INSTALL CALTRANS STD. CLASS 1 FLEXIBLE POST DELINEATORS (TYPE F-1), EVERY 20'.
INV. SS 207.31
TOP OF WATER 206.12
"T" 1+52± (43' Lt.)
A.C. CONFORM - LOCATE EXIST. DRIVES IN FIELD AND PROVIDE 4" A.C. ON 12" CLASS-2 AGGREGATE BASE (95% RELATIVE COMPACTION). CONFORM TO EXIST. DRIVE.
STA. "T" 0+60± TO 0+92± - INSTALL DUCTILE IRON PIPE WITH HOT DIP BITUMINOUS COATING AND MECHANICAL JOINTS (LIMITS BASED ON 10' NORMAL CLEARANCE TO WATER LINE)
EXIST. S.S. MH (TO BE ABANDONED)
SEE NOTE 6 SHEET 15
ABANDON EXIST. SANITARY SEWER LINE IN PLACE
EDGE OF PAVEMENT
REMOVE & SALVAGE EXIST. SANITARY LIFT STATION.
"T" 2+39.00 SS-MH#2-52' LT.
RIM 218.10
INV. 206.16
SEE NOTE 5 SHEET 15
3' CLEAR TO EDGE OF SHOULDER (TYP.)
"T" 2+43± (38' Lt)
INSTALL 25'± 6' C.L. FENCE, SEE F10
SEE 1 16 39
11¼° BEND
12" TEE
12" GATE VALVES
"T" 2+00.00 PV. 217.06
45° BEND
"S" LINE
CAP FOR FUTURE USE
ABANDON EXIST. WATER LINE IN PLACE.
12" D.I.P.
4" WHITE LINE (SOLID)
DOUBLE 4" YELLOW LINE (SOLID)
"T" 3+00.00 TB. 219.83
"T" 3+00.00 TB. 219.20
"T" 3+08.47 END "S" LINE
"T" 2+00.00 TB 217.01
THOMAS
ROAD
SEE SHEET 29 FOR BRIDGE PLAN
STA. "T" 3+43.67 MATCH LINE - SEE SHEET 17
3+43.67 BEGIN BRIDGE (℄ ABUTMENT)
3+08.47 BC 218.59
218.44
214.0
1+73.67 BVC 215.45
2+14.63 EC 216.59
216.21
"T" 2+14.63 EC BEGIN WHITE STRIPE
BEGIN METAL BEAM GUARDRAIL INSTALL PER CALTRANS STANDARD PLANS, SHEET A79-A, TYPE 1 FLARE
BEGIN SUPERELEVATION TRANSITION
"T" 1+50.00 END SUPERELEVATION TRANSITION RIGHT SIDE
"T" 0+41.29 END SUPERELEVATION TRANSITION LEFT SIDE
PLUG EXIST. SANITARY LINE DOWNSTREAM.
"T" 0+41.87 SSMH #1 43.43' Lt.
RIM 212.43
INV. 207.78
TIE INTO EXIST. SAN. LINE
232'± 12" VCP @ S=0.007
"T" 1+00.00 PV. 214.15
"T" 1+00.00 TB 214.08
"0+87.50 EVC 212.87
CONNECT TO EXIST. WATER STA. 0+66.5± WITH 11¼° BEND. CONNECT AT VALVE - STA. "T" 0+65±
PROVIDE 4' WIDE ROCK SPILLPAD FROM A.C. BERM TO TOE OF SLOPE - GRADE TO DRAIN.
0+41.29 BC 212.08
"T" 0+37.50 MVC BEGIN A.C. BERM
EXIST. S.S. TO REMAIN
EDGE OF PAVEMENT
PROVIDE A.C. CONFORM - REMOVE EXIST. A.C. DOWN TO SUBBASE. RE-COMPACT SUBBASE AND PLACE NEW A.C. TO CONFORM TO EXIST. PAVEMENT AT STA. "T" 99+21.
"T" 99+41.29 - BEGIN SUPERELEVATION TRANSITION - LEFT SIDE
"T" 99+21 - SAWCUT EXIST. PAVEMENT
"T" 0+00.00 = 100+00.00 PV 213.19
"T" 0+00 PV 212.85
"T" 0+50.00 BEGIN SUPERELEVATION TRANSITION RIGHT SIDE
99+87.50 BVC 212.67
99+41.29 213.87 (FUTURE ELEV. - TYP.)
CONFORM TO EXIST. STRIPING
W5 (Rt.) W6 (20 M.P.H.)
R2 (40 MPH)
R26 A(S)
99 100 0 1 2 3
100' V.C.
600' VC
220 215 210
"T" 99+41.29 213.87
"T" 99+87.50 BVC ELEV. 212.67
"T" 0+41.29 BC 212.08
"T" 0+41.87 SSMH #1 43.43' Lt. RIM 212.43 INV. 207.78
"T" 0+66.5± CONNECT NEW MAIN TO EXIST.
"T" 0+87.50 EVC ELEV. 212.87
"T" 1+73.67 BVC ELEV. 215.45
"T" 2+14.63 EC 216.59
"T" 2+39.00 SS-MH #2-52' LT. INV. 206.16 RIM 218.10
"T" 3+08.47 BC 218.59
22½° BEND, SEE 1 16 39
"T" LINE ELEV.
S=0.026
S=0.030
12" D.I.P.
PUSH-ON JOINTS
FLANGED JOINTS
22½° BEND
EXIST. GROUND @ "T" LINE
EXIST. 12" D.I.P. MAIN
232'-12" VCP @ S=0.007
"T" 0+70± TO 1+15± - INSTALL DUCTILE IRON PIPE WITH HOT DIP BITUMINOUS COATING AND MECHANICAL JOINTS
DIVE DOWN TO MAINTAIN 1 FOOT MIN. CLEARANCE UNDER S.S. MAIN
145' TWIN POLYLINED 8" D.I.P. @ S=0.1989 - SEE SHEET 21 FOR SIPHON DETAILS.
STA. "T" 3+43.67 MATCH LINE - SEE SHEET 17 EC, BC
+3% +2% +1% 0% -1% -2% -3%
LEFT SIDE
AXIS OF ROTATION
RIGHT SIDE
S=0.007
1.8%
-1.8%
0.35%
-2.5%
SUPERELEVATION DIAGRAM
50' V.C.
AXIS OF ROTATION = "S" LINE
AXIS OF ROTATION = "T" LINE

PLAN: THOMAS ROAD
1" = 20'

PROFILE THOMAS ROAD
HORIZ.: 1" = 20'
VERT.: 1" = 4'

DRWN.: TL
CHKD.: SOL, DVR
DEPT.: CIVIL

R+G RUTH AND GOING, INC.
Civil Engineering Land Surveying
2180 LUNDY AVE. SAN JOSE, CA. 95131 (408) 943-1840

JOB.# 17273-130

Robert A. Smith
ROBERT A. SMITH RCE 20821 EXP. 9-30-89
DATE: 5-24-88

Santa Clara Valley Water District

ACCEPTED BY DISTRICT: DATE 5/25/88

PROJECT ENGINEER R.C.E. NO. 25413
Bruce Wilson DIVISION ENGINEER R.C.E. NO. 15851

REVISION	DATE	DESCRIPTION	BY	BY

DESIGNED:
DRAWN:
CHECKED:
SUBMITTED:
DATE APPROVED

THOMAS ROAD AT UVAS CREEK
PLAN AND PROFILE

SCALE AS SHOWN
SPEC. No.
SHEET 16
FILE No.

SAFETY PAYS

SANTA CLARA_CA Work Maps
SANTA CLARA_CA0246

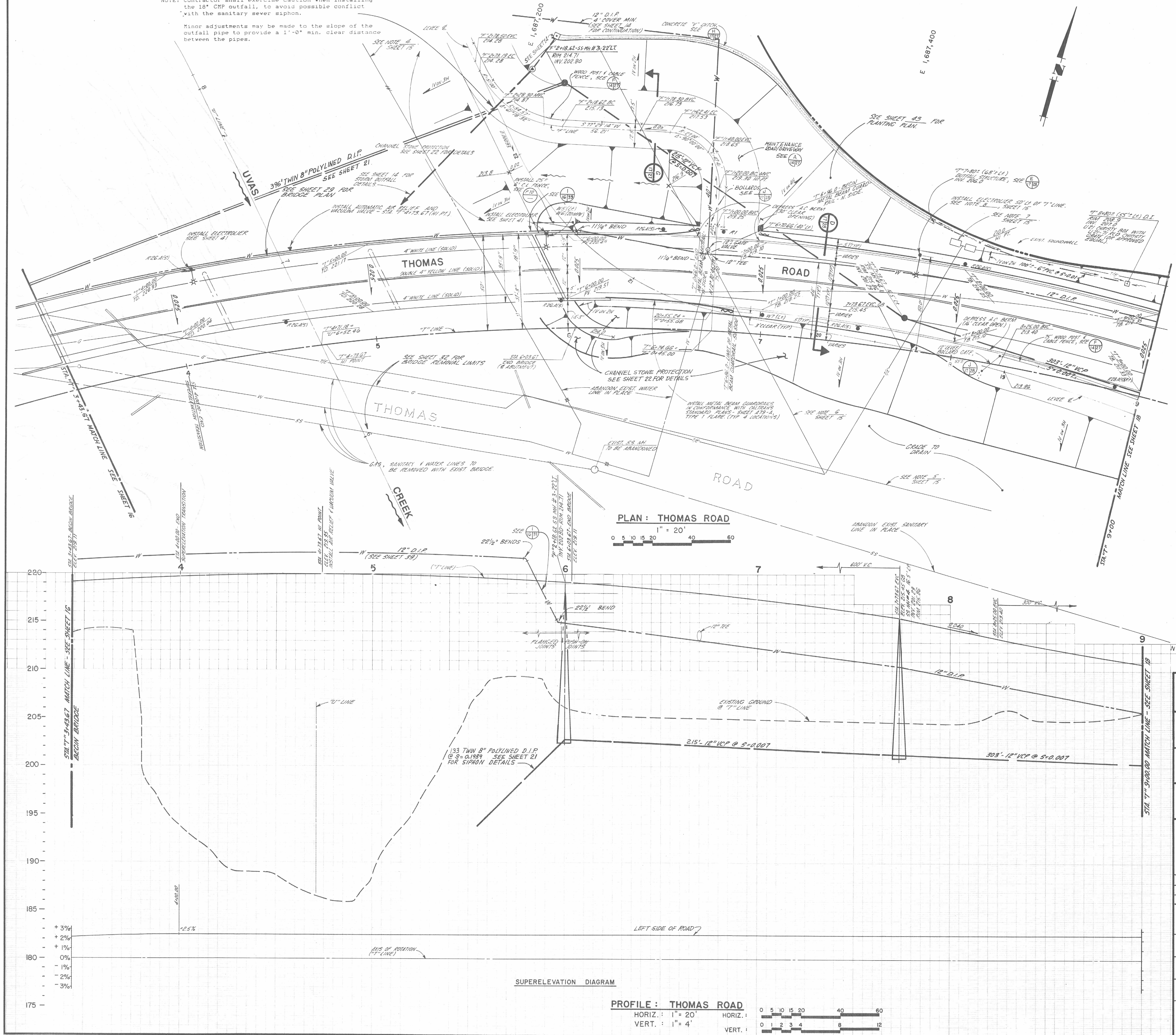
JOB NO. 873702
DATE OF PHOTOGRAPHY 8-25-87
SCALE 1"= 20'/1'

AERO-GEODETIC CORPORATION
CONSULTING PHOTOGRAMMETRIC ENGINEERS
1600 WARBURTON AVENUE SANTA CLARA CALIFORNIA 95050

FUNCTION ANALYSIS - VE PAYS

NOTE: Contractor shall exercise caution when installing the 18" CMP outfall, to avoid possible conflict with the sanitary sewer siphon.

Minor adjustments may be made to the slope of the outfall pipe to provide a 1'-0" min. clear distance between the pipes.


UVAS
CREEK
THOMAS
ROAD
THOMAS
ROAD
3-96" TWIN 8" POLYLINED D.I.P. SEE SHEET 21
SEE SHEET 29 FOR BRIDGE PLAN
CHANNEL STONE PROTECTION SEE SHEET 22 FOR DETAILS
INSTALL AUTOMATIC AIR RELIEF AND VACUUM VALVE
INSTALL ELECTROLIER SEE SHEET 41
SEE SHEET 43 FOR PLANTING PLAN
MAINTENANCE ROAD/DRIVEWAY
CONCRETE "C" DITCH
12" D.I.P.
12" GATE VALVE
12" TEE
11 1/4° BEND
BOLLARDS
4" WHITE LINE (SOLID)
DOUBLE 4" YELLOW LINE (SOLID)
"T" LINE
SEE SHEET 32 FOR BRIDGE REMOVAL LIMITS
END BRIDGE (E ABUTMENT)
CHANNEL STONE PROTECTION SEE SHEET 22 FOR DETAILS
ABANDON EXIST. WATER LINE IN PLACE
INSTALL METAL BEAM GUARDRAILS IN CONFORMANCE WITH CALTRANS STANDARD PLANS
SEE NOTE 4 SHEET 15
SEE NOTE 5 SHEET 15
SEE NOTE 6 SHEET 15
GRADE TO DRAIN
EXIST. SS MH TO BE ABANDONED
SANITARY & WATER LINES TO BE REMOVED WITH EXIST BRIDGE
ABANDON EXIST. SANITARY LINE IN PLACE
LEVEE
303'- 12" VCP S=0.007
E 1,687,200
E 1,687,400
N 180,800
STA. "T" 3+43.67 MATCH LINE SEE SHEET 16
STA. "T" 9+00 MATCH LINE SEE SHEET 18
PLAN : THOMAS ROAD
1" = 20'
0 5 10 15 20 40 60
12" D.I.P. (SEE SHEET 39)
22 1/2° BENDS
22 1/2° BEND
FLANGED JOINTS
PUSH-ON JOINTS
"T" LINE
EXISTING GROUND @ "T" LINE
12" D.I.P.
215'- 12" VCP @ S=0.007
303'- 12" VCP @ S=0.007
133 TWIN 8" POLYLINED D.I.P. @ S=0.1984 SEE SHEET 21 FOR SIPHON DETAILS
STA. "T" 3+43.67 MATCH LINE - SEE SHEET 16 BEGIN BRIDGE
STA. "T" 9+00.00 MATCH LINE - SEE SHEET 18
600' V.C.
300' V.C.
220
215
210
205
200
195
190
185
180
175
4
5
6
7
8
9
+3%
+2%
+1%
0%
-1%
-2%
-3%
LEFT SIDE OF ROAD
AXIS OF ROTATION ("T" LINE)
SUPERELEVATION DIAGRAM
PROFILE : THOMAS ROAD
HORIZ. : 1" = 20'
VERT. : 1" = 4'
HORIZ. : 0 5 10 15 20 40 60
VERT. : 0 1 2 3 4 8 12

ENVIRONMENTAL ENHANCEMENT THRU ENGINEERING

DRWN.: TL CHKD.: SDL, DVR DEPT.: CIVIL	RUTH AND GOING, INC. Civil Engineering Land Surveying 2180 LUNDY AVE. SAN JOSE, CA. 95131 (408) 943-1840	JOB.# 17273-130

Robert A Smith

ROBERT A. SMITH RCE 20821 EXP. 9-30-89

DATE: 5-24-88

Santa Clara Valley Water District

ACCEPTED BY DISTRICT: DATE 5/25/88

PROJECT ENGINEER R.C.E. NO. 25413

Bruce Wilson

DIVISION ENGINEER R.C.E. NO. 15851

REVISION	DATE	DESCRIPTION	BY	BY
△				
△				

DESIGNED:

DRAWN:

CHECKED:

THOMAS ROAD AT UVAS CREEK
PLAN AND PROFILE

SUBMITTED:

DATE APPROVED

SCALE AS SHOWN

SPEC. No.

SHEET 17

FILE No.

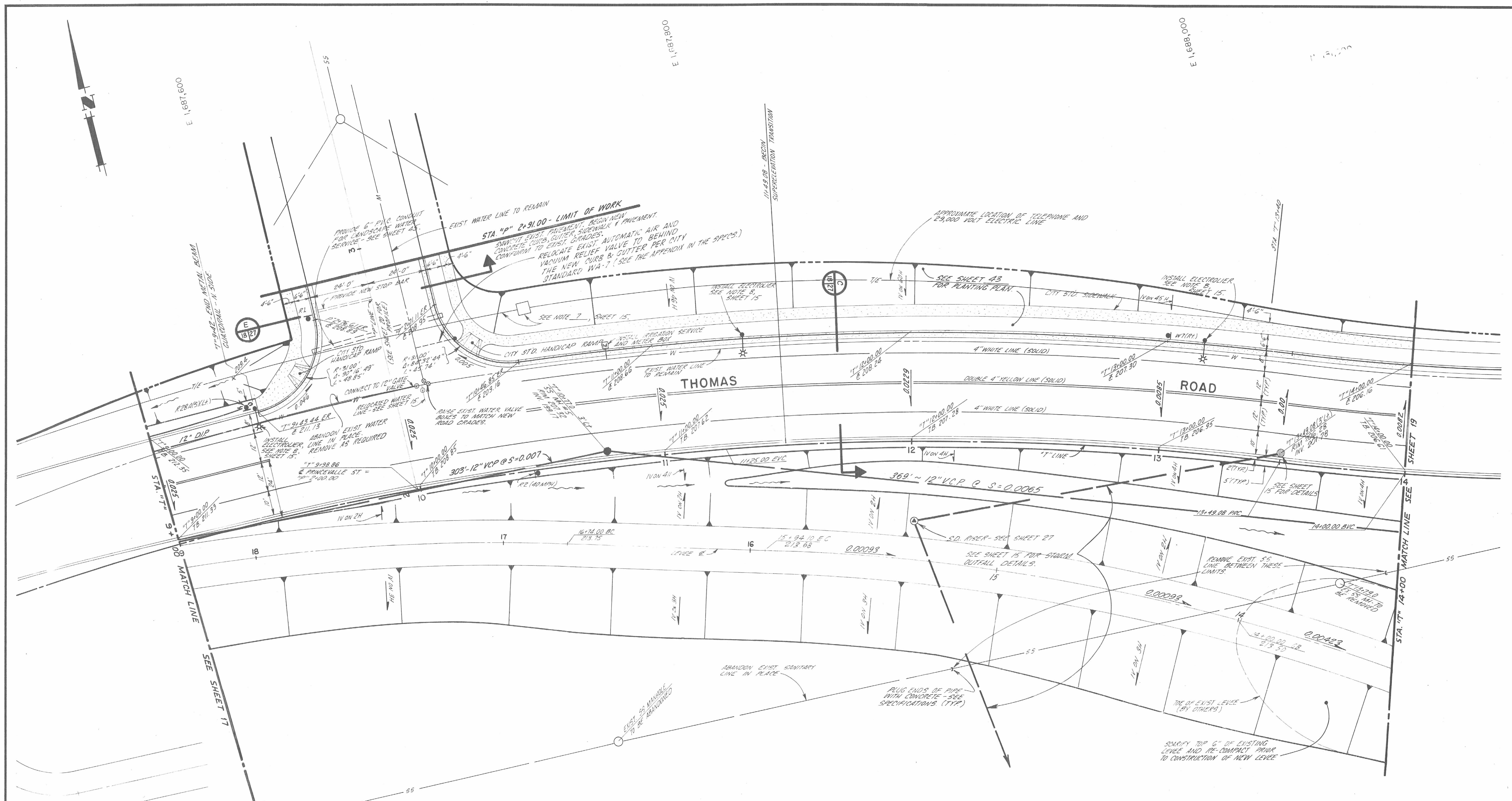
SAFETY PAYS

SANTA CLARA_CA Work Maps
SANTA CLARA_CA0247

JOB NO 873702
DATE OF PHOTOGRAPHY 8-25-87
SCALE 1"=20'/1'

AERO-GEODETIC CORPORATION
CONSULTING PHOTOGRAMMETRIC ENGINEERS
1600 WARBURTON AVENUE SANTA CLARA CALIFORNIA 95050

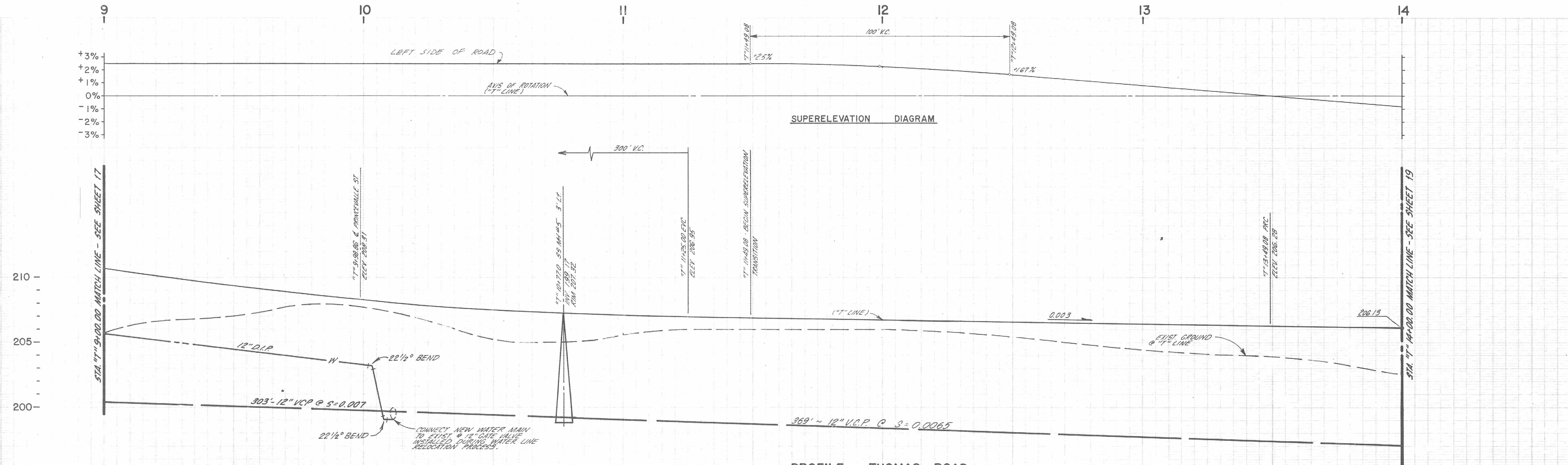
ENVIRONMENTAL
ENHANCEMENT
THRU ENGINEERING


E 1,687,600
E 1,687,800
E 1,688,000
PROVIDE 6" P.V.C. CONDUIT FOR LANDSCAPE WATER SERVICE - SEE SHEET 45.
EXIST. WATER LINE TO REMAIN
STA. "P" 2+91.00 - LIMIT OF WORK
SAWCUT EXIST. PAVEMENT. BEGIN NEW CONCRETE CURB, GUTTER, SIDEWALK & PAVEMENT. CONFORM TO EXIST. GRADES.
RELOCATE EXIST. AUTOMATIC AIR AND VACUUM RELIEF VALVE TO BEHIND THE NEW CURB & GUTTER PER CITY STANDARD WA-7 (SEE THE APPENDIX IN THE SPECS.)
"T" 9+42 - END METAL BEAM GUARDRAIL - N. SIDE
24'-0"
6'-6"
4'-6"
PROVIDE NEW STOP BAR
"P" 2+76.61 ER ℄ 208.89
"P" LINE (SEE SHEET 20 FOR PROFILE)
"P" 2+71.11 ER ℄ 208.95
CITY STD. HANDICAP RAMP
R=31.00' Δ=90°16'49" L=48.85'
R=31.00' Δ=84°32'44" L=45.74'
SEE NOTE 7, SHEET 15.
CITY STD. HANDICAP RAMP
INSTALL IRRIGATION SERVICE AND METER BOX
INSTALL ELECTROLIER SEE NOTE 8, SHEET 15
CONNECT TO 12" GATE VALVE
RELOCATED WATER LINE - SEE SHEET 15
RAISE EXIST. WATER VALVE BOXES TO MATCH NEW ROAD GRADES.
"T" 10+46.85 ER ℄ 209.16
"T" 10+77.0 SS MH #5 3' Lt. RIM 207.32 INV. 199.17
"T" 11+00.00 ℄ 208.66
EXIST. WATER LINE TO REMAIN
THOMAS
ROAD
"T" 9+43.44 ER ℄ 211.13
INSTALL ELECTROLIER, SEE NOTE 8, SHEET 15.
ABANDON EXIST. WATER LINE IN PLACE. REMOVE AS REQUIRED
"T" 9+98.86 ℄ PRINCEVALLE ST. = "P" 2+00.00
"T" 10+00.00 T.B. 208.85
303'-12" VCP @ S=0.007
"T" 11+00.00 T.B. 207.62
11+25.00 EVC
R2 (40 MPH)
12" DIP
1V ON 2H
1V ON 4H
0.025
0.046
0.005
16+74.00 BC 213.75
15+94.10 EC 213.68
LEVEE ℄
0.00093
11+49.08 - BEGIN SUPERELEVATION TRANSITION
APPROXIMATE LOCATION OF TELEPHONE AND 29,000 VOLT ELECTRIC LINE
SEE SHEET 43 FOR PLANTING PLAN.
CITY STD. SIDEWALK
1V ON 45 H
1V ON 60H
INSTALL ELECTROLIER SEE NOTE 8, SHEET 15.
STA. "T" 13+40
W7(Rt.)
4" WHITE LINE (SOLID)
DOUBLE 4" YELLOW LINE (SOLID)
"T" 12+00.00 ℄ 208.24
"T" 13+00.00 ℄ 207.30
"T" 14+00.00 ℄ 206.16
"T" 12+00.00 T.B. 207.28
"T" 13+00.00 T.B. 206.95
"T" 13+49.08 (3' Lt.) RIM 206.28 INV. 201.78
"T" 14+00.00 T.B. 206.61
0.0229
0.0085
0.00
0.0082
12' (TYP.)
2'(TYP.)
5'(TYP.)
"T" LINE
369' ~ 12" V.C.P. @ S=0.0065
SEE SHEET 15 FOR DETAILS
13+49.08 PRC
14+00.00 BVC
S.D. RISER - SEE SHEET 27
SEE SHEET 15 FOR STORM OUTFALL DETAILS.
REMOVE EXIST. SS LINE BETWEEN THESE LIMITS.
"T" 13+79.0 EX. SS MH TO BE REMOVED
0.00423
14+00.00 GB 213.50
ABANDON EXIST. SANITARY LINE IN PLACE
PLUG ENDS OF PIPE WITH CONCRETE - SEE SPECIFICATIONS. (TYP.)
TOE OF EXIST. LEVEE (BY OTHERS)
SCARIFY TOP 6" OF EXISTING LEVEE AND RE-COMPACT PRIOR TO CONSTRUCTION OF NEW LEVEE
STA. "T" 9+00 MATCH LINE SEE SHEET 17
STA. "T" 14+00 MATCH LINE SEE SHEET 19
SS

PLAN : THOMAS ROAD

1" = 20'

0 5 10 15 20 40 60


9
10
11
12
13
14
+3%
+2%
+1%
0%
-1%
-2%
-3%
LEFT SIDE OF ROAD
AXIS OF ROTATION ("T" LINE)
"T" 11+49.08
+2.5%
100' V.C.
"T" 12+49.08
+1.67%
SUPERELEVATION DIAGRAM
300' V.C.
STA. "T" 9+00.00 MATCH LINE - SEE SHEET 17
"T" 9+98.86 ℄ PRINCEVALLE ST. ELEV. 208.31
"T" 10+77.0 SS MH #5 3' Lt. INV. 199.17 RIM 207.32
"T" 11+25.00 EVC ELEV. 206.95
"T" 11+49.08 - BEGIN SUPERELEVATION TRANSITION
"T" 13+49.08 PRC ELEV. 206.28
STA. "T" 14+00.00 MATCH LINE - SEE SHEET 19
210
205
200
12" D.I.P.
W
22½° BEND
22½° BEND
303'-12" VCP @ S=0.007
CONNECT NEW WATER MAIN TO EXIST. @ 12" GATE VALVE INSTALLED DURING WATER LINE RELOCATION PROCESS.
("T" LINE)
0.003
206.13
EXIST. GROUND @ "T" LINE
369' ~ 12" V.C.P. @ S=0.0065

PROFILE : THOMAS ROAD

HORIZ. : 1" = 20'
VERT. : 1" = 4'

HORIZ. : 0 5 10 15 20 40 60
VERT. : 0 1 2 3 4 8 12

DRWN.: TL
CHKD.: SDL, DVR
DEPT.: CIVIL

RUTH AND GOING, INC.
Civil Engineering Land Surveying
2180 LUNDY AVE. SAN JOSE, CA. 95131 (408) 943-1840

JOB.# 17273-130

Robert A. Smith
ROBERT A. SMITH RCE 20821 EXP. 9-30-89
5-24-88
DATE:

Santa Clara Valley Water District

ACCEPTED BY DISTRICT: DATE 5/26/88

PROJECT ENGINEER R.C.E. NO. 25413
Bruce Wilson
DIVISION ENGINEER R.C.E. NO. 15851

REVISION	DATE	DESCRIPTION	BY	BY
△				
△				

DESIGNED:
DRAWN:
CHECKED:

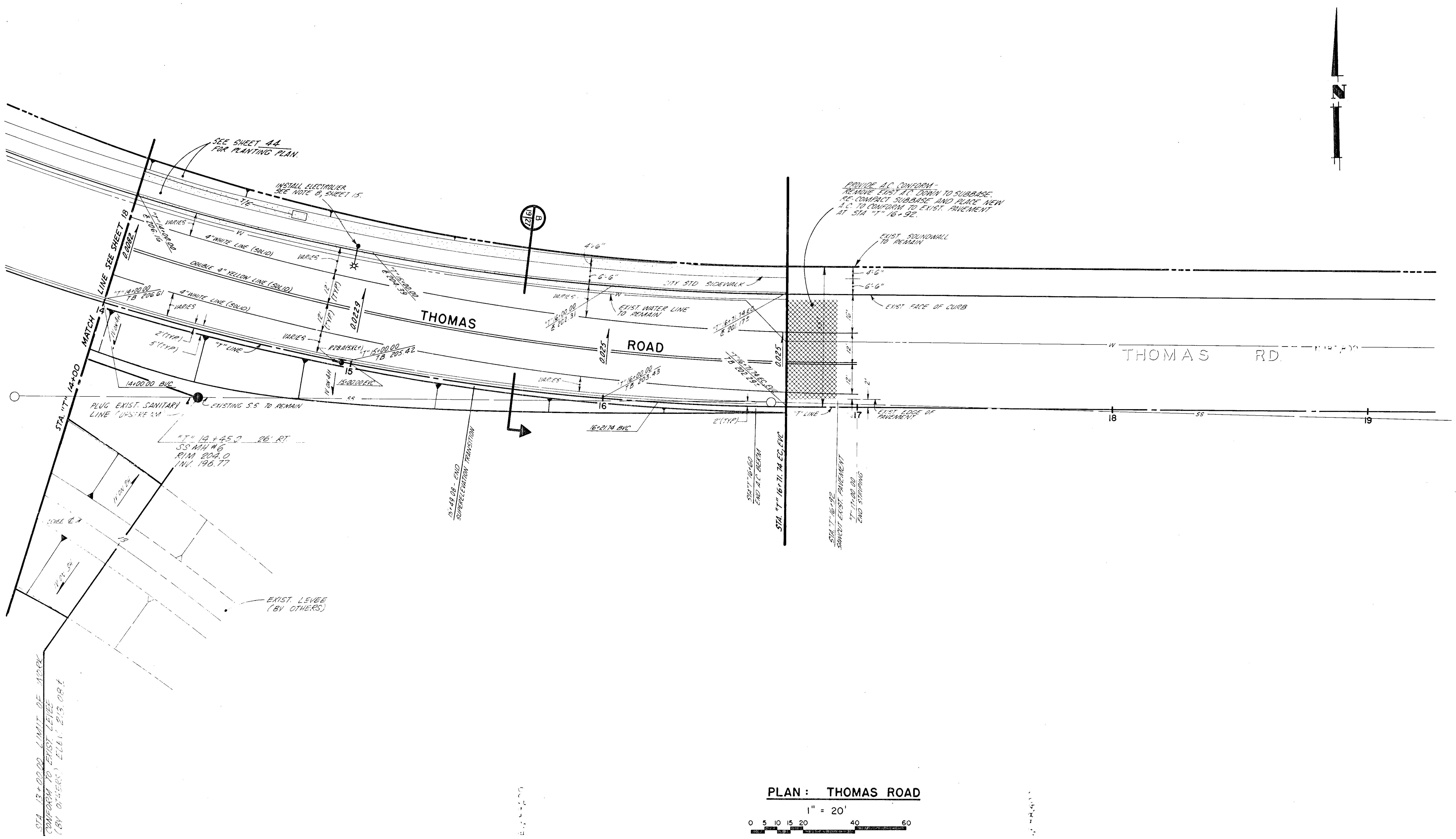
THOMAS ROAD AT UVAS CREEK
PLAN AND PROFILE

SUBMITTED:
DATE APPROVED
SCALE AS SHOWN
SPEC. No.
SHEET 18
FILE No.

SANTA CLARA_CA Work Maps
SANTA CLARA_CA0248

JOB NO. 873702
DATE OF PHOTOGRAPHY 8-25-87
SCALE 1" = 20'/1'

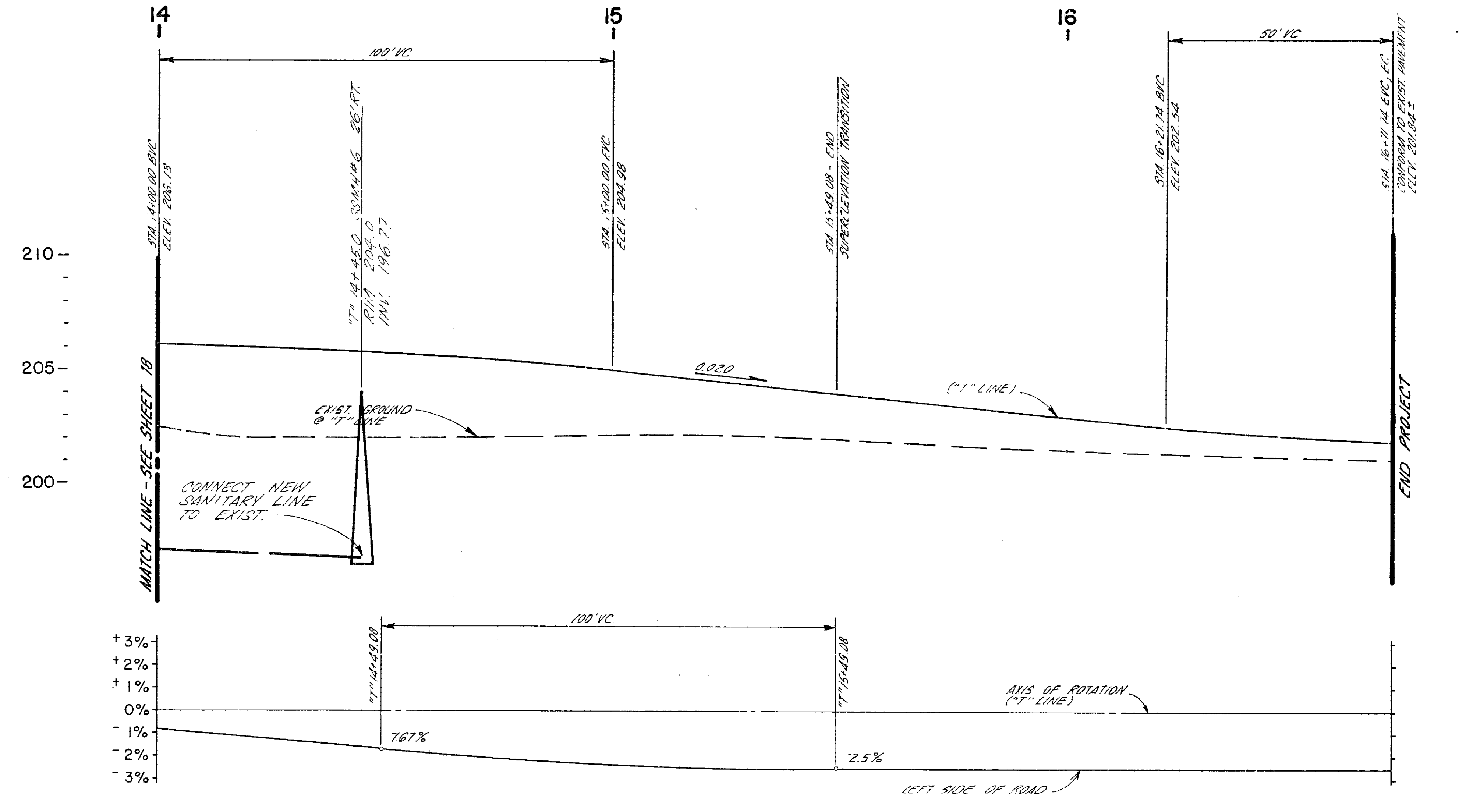
AERO-GEODETIC CORPORATION
CONSULTING PHOTOGRAMMETRIC ENGINEERS
1600 WARBURTON AVENUE SANTA CLARA CALIFORNIA 95050


N
SEE SHEET 44 FOR PLANTING PLAN.
INSTALL ELECTROLIER SEE NOTE 8, SHEET 15.
19/27 B
MATCH LINE SEE SHEET 18
STA. "T" 14+00
0.0082
"T" 14+00.00 ℄ 206.16
VARIES
W
4" WHITE LINE (SOLID)
DOUBLE 4" YELLOW LINE (SOLID)
"T" 14+00.00 TB 206.61
4" WHITE LINE (SOLID)
12' (TYP.)
0.0229
"T" 15+00.00 ℄ 204.39
THOMAS
ROAD
2"(TYP.)
5"(TYP.)
"T" LINE
R28A(SXL+)
"T" 15+00.00 TB. 205.42
1V ON 4H
15+00.00 EVC
14+00.00 BVC
PLUG EXIST. SANITARY LINE (UPSTREAM)
EXISTING S.S. TO REMAIN
SS
"T" 14+45.0 26' RT.
SS MH #6
RIM 204.0
INV. 196.77
1V ON 2H
LEVEE ℄
15+49.08 - END SUPERELEVATION TRANSITION
4'-6"
6'-6"
CITY STD SIDEWALK
EXIST. WATER LINE TO REMAIN
"T" 16+00.00 ℄ 202.31
"T" 16+71.74 EC ℄ 201.17±
0.025
"T" 16+00.00 TB. 203.43
"T" 16+71.74 EC, EVC TB 202.29±
16+21.74 BVC
2"(TYP.)
STA "T" 16+60 END A.C. BERM
STA. "T" 16+71.74 EC, EVC
PROVIDE A.C. CONFORM - REMOVE EXIST A.C. DOWN TO SUBBASE. RE-COMPACT SUBBASE AND PLACE NEW A.C. TO CONFORM TO EXIST. PAVEMENT AT STA "T" 16+92.
EXIST. SOUNDWALL TO REMAIN
EXIST. FACE OF CURB
16'
12'
2'
EXIST. EDGE OF PAVEMENT
STA "T" 16+92 SAWCUT EXIST. PAVEMENT
"T" 17+00.00 END STRIPING
THOMAS RD
16
17
18
19
EXIST. LEVEE (BY OTHERS)
STA 13+00.00 LIMIT OF WORK CONFORM TO EXIST. LEVEE (BY OTHERS) ELEV. 213.0±

PLAN : THOMAS ROAD

1" = 20'

0 5 10 15 20 40 60


14
15
16
17
18
100' VC
50' VC
STA. 14+00.00 BVC ELEV. 206.13
"T" 14+45.0 SSMH #6 26' RT. RIM 204.0 INV. 196.77
STA. 15+00.00 EVC ELEV. 204.98
STA. 15+49.08 - END SUPERELEVATION TRANSITION
STA 16+21.74 BVC ELEV. 202.54
STA. 16+71.74 EVC, EC CONFORM TO EXIST. PAVEMENT ELEV. 201.84±
210
205
200
0.020
("T" LINE)
EXIST. GROUND @ "T" LINE
CONNECT NEW SANITARY LINE TO EXIST.
MATCH LINE - SEE SHEET 18
END PROJECT
100' VC
"T" 14+49.08
"T" 15+49.08
+3%
+2%
+1%
0%
-1%
-2%
-3%
7.67%
2.5%
AXIS OF ROTATION ("T" LINE)
LEFT SIDE OF ROAD

SUPERELEVATION DIAGRAM

PROFILE : THOMAS ROAD

HORIZ. : 1" = 20' HORIZ. : 0 5 10 15 20 40 60

VERT. : 1" = 4' VERT. : 0 1 2 3 4 8 12

DRWN.: TL
CHKD.: SDL, DVR
DEPT.: CIVIL

R+G RUTH AND GOING, INC.
Civil Engineering Land Surveying
2180 LUNDY AVE. SAN JOSE, CA. 95131 (408) 943-1840

JOB. # 17273-130

Robert A. Smith
ROBERT A. SMITH RCE 20821 EXP. 9-30-89
DATE: 5-24-88

Santa Clara Valley Water District

ACCEPTED BY DISTRICT: DATE 5/25/88

PROJECT ENGINEER R.C.E. NO. 25413
Bruce Wilson
DIVISION ENGINEER R.C.E. NO. 15851

REVISION	DATE	DESCRIPTION	BY	BY
△				
△				

DESIGNED:

DRAWN:

CHECKED:

THOMAS ROAD AT UVAS CREEK
PLAN AND PROFILE

SUBMITTED:

DATE APPROVED

SCALE AS SHOWN

SPEC. No.

SHEET 19

FILE No.

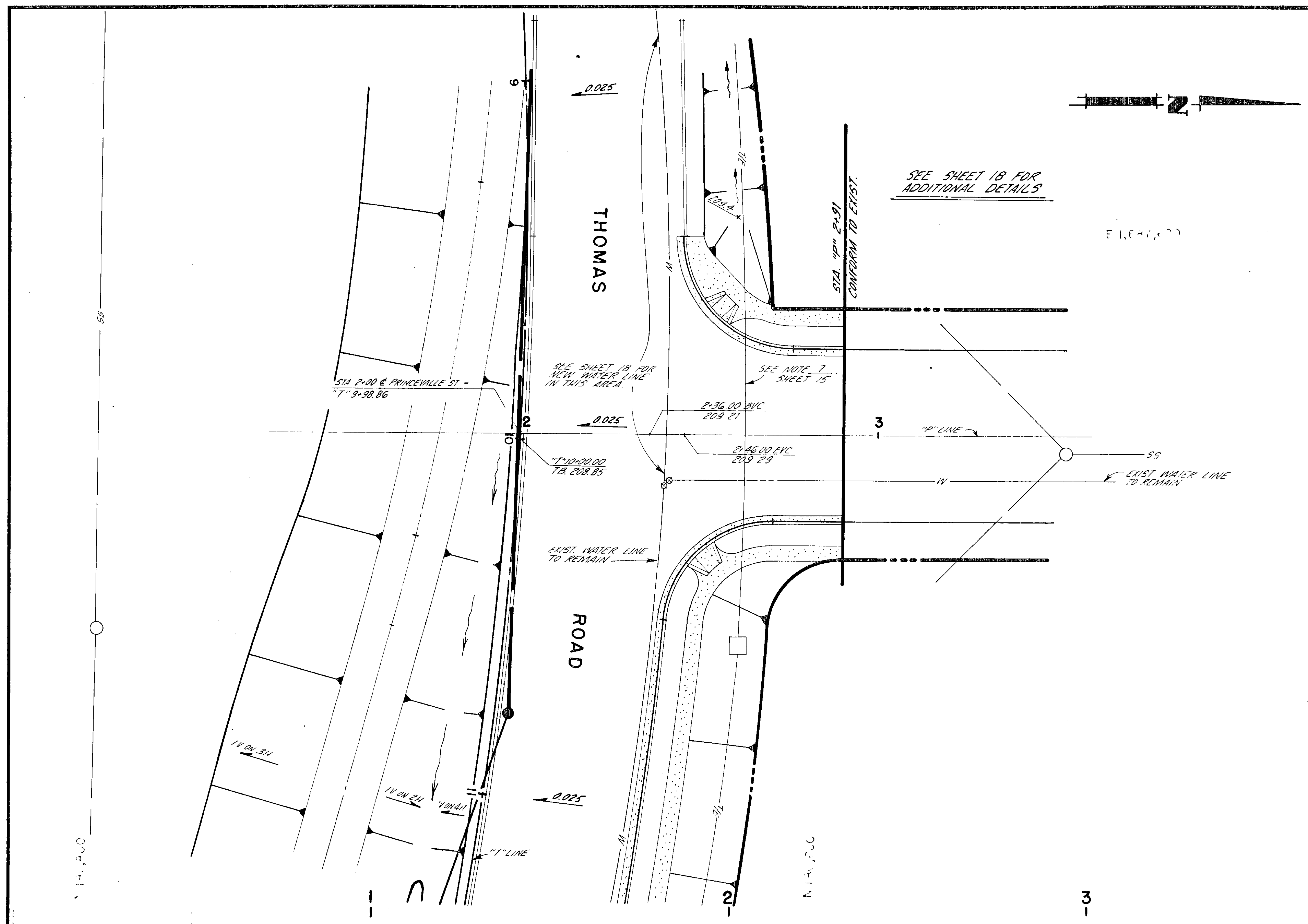
ENVIRONMENTAL ENHANCEMENT THRU ENGINEERING

SANTA CLARA_CA Work Maps
SANTA CLARA_CA0249

DATE OF PHOTOGRAPHY 8-25-87

AERO-GEODETIC CORPORATION
CONSULTING PHOTOGRAMMETRIC ENGINEERS
1600 WARBURTON AVENUE, SANTA CLARA, CALIFORNIA 95050

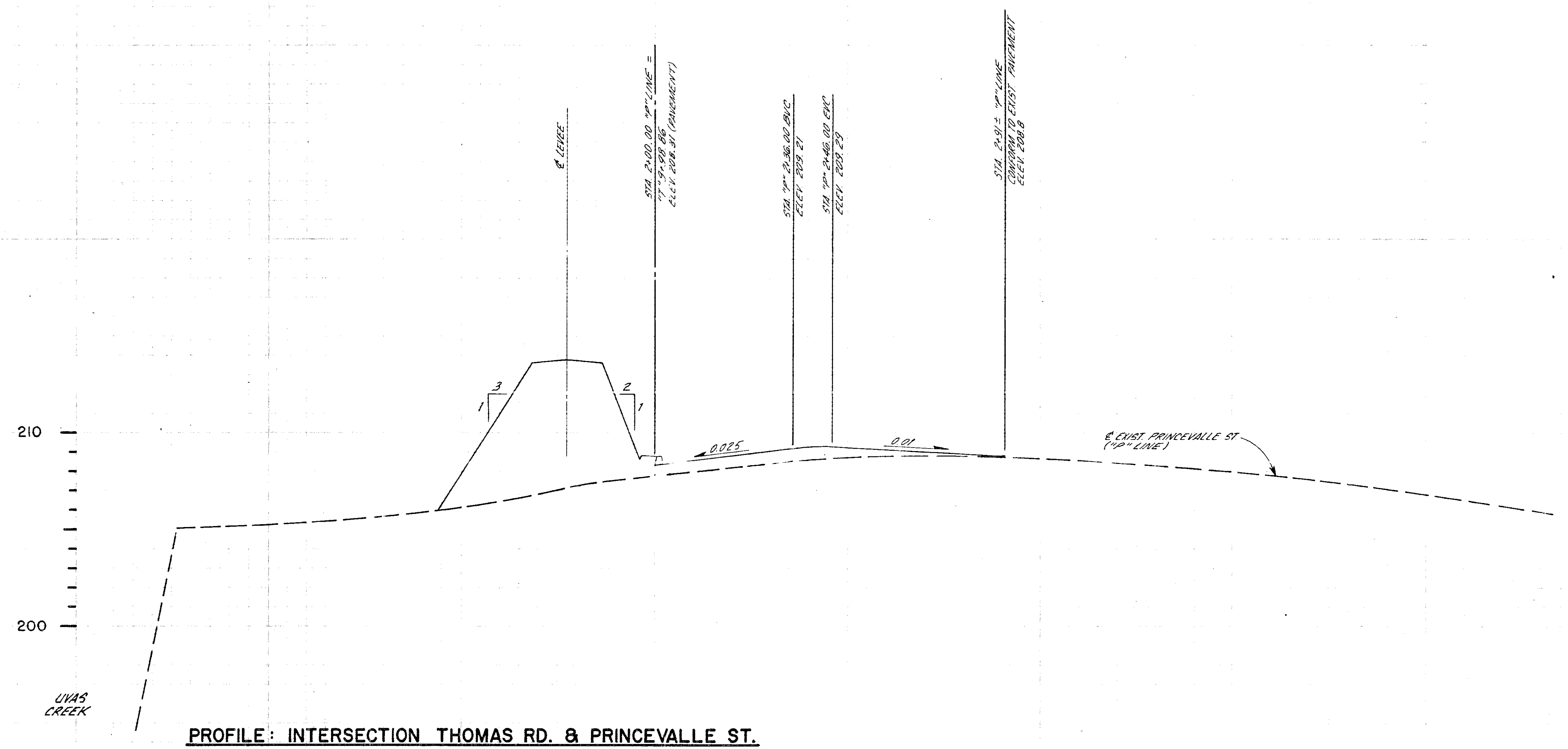
ENVIRONMENTAL ENHANCEMENT THRU ENGINEERING


THOMAS
ROAD
0.025
SEE SHEET 18 FOR ADDITIONAL DETAILS
STA. "P" 2+91 CONFORM TO EXIST.
209.4
STA 2+00 ℄ PRINCEVALLE ST = "T" 9+98.86
SEE SHEET 18 FOR NEW WATER LINE IN THIS AREA
SEE NOTE 7 SHEET 15
2+36.00 BVC 209.21
2+46.00 EVC 209.29
"T"10+00.00 T.B. 208.85
"P" LINE
SS
W
EXIST. WATER LINE TO REMAIN
"T" LINE
2
3
9
10

PLAN: INTERSECTION THOMAS RD. & PRINCEVALLE ST.

1" = 20'

0 5 10 15 20 40 60


210
200
UVAS CREEK
℄ LEVEE
STA. 2+00.00 "P" LINE = "T" 9+98.86 ELEV. 208.31 (PAVEMENT)
STA. "P" 2+36.00 BVC ELEV. 209.21
STA. "P" 2+46.00 EVC ELEV. 209.29
STA. 2+91± "P" LINE CONFORM TO EXIST. PAVEMENT ELEV. 208.8
℄ EXIST. PRINCEVALLE ST. ("P" LINE)
3
1
2
1
0.025
0.01

PROFILE: INTERSECTION THOMAS RD. & PRINCEVALLE ST.

HORIZ. : 1" = 20'
VERT. : 1" = 4'

HORIZ. : 0 5 10 15 20 40 60
VERT. : 0 1 2 3 4 8 12

DRWN.: TL
CHKD.: SDL, DVR
DEPT.: CIVIL

R+G RUTH AND GOING, INC.
Civil Engineering Land Surveying
2180 LUNDY AVE. SAN JOSE, CA. 95131 (408) 943-1840

JOB.# 17273-130

Robert A. Smith
ROBERT A. SMITH RCE 20821 EXP. 9-30-89
DATE: 5-24-88

Santa Clara Valley Water District

ACCEPTED BY DISTRICT: DATE 5/25/88

PROJECT ENGINEER R.C.E. NO. 25413
Bruce Wilson
DIVISION ENGINEER R.C.E. NO. 15851

REVISION	DATE	DESCRIPTION	BY	BY
△				
△				

DESIGNED:
DRAWN:
CHECKED:

THOMAS ROAD AT UVAS CREEK
PLAN AND PROFILE

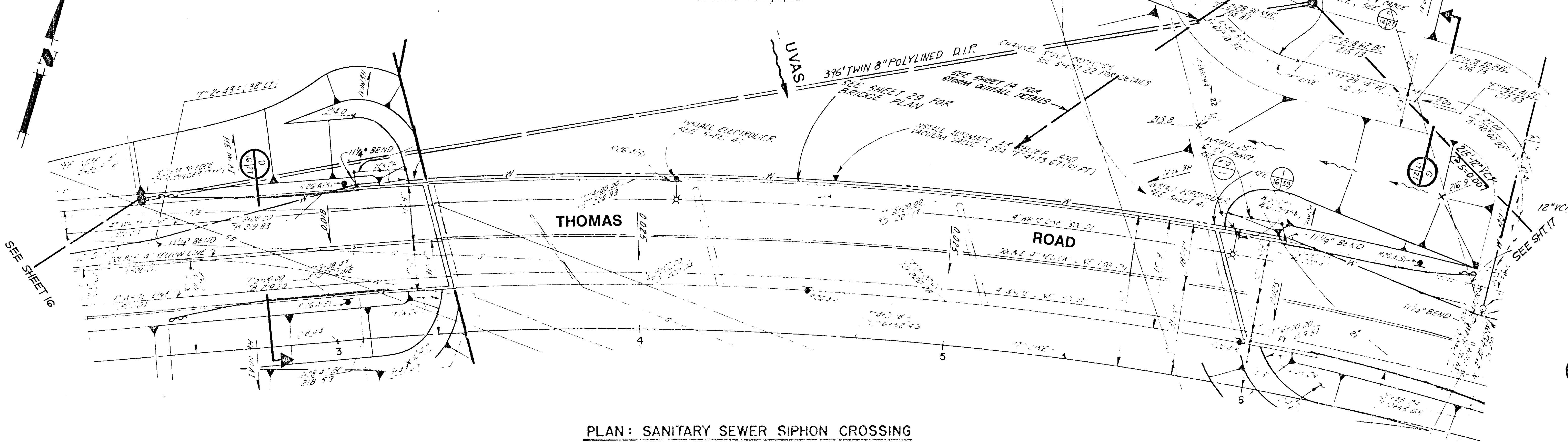
SUBMITTED:
DATE APPROVED
SCALE AS SHOWN
SPEC. No.
SHEET 20
FILE No.

SANTA CLARA_CA Work Maps
SANTA CLARA_CA0250

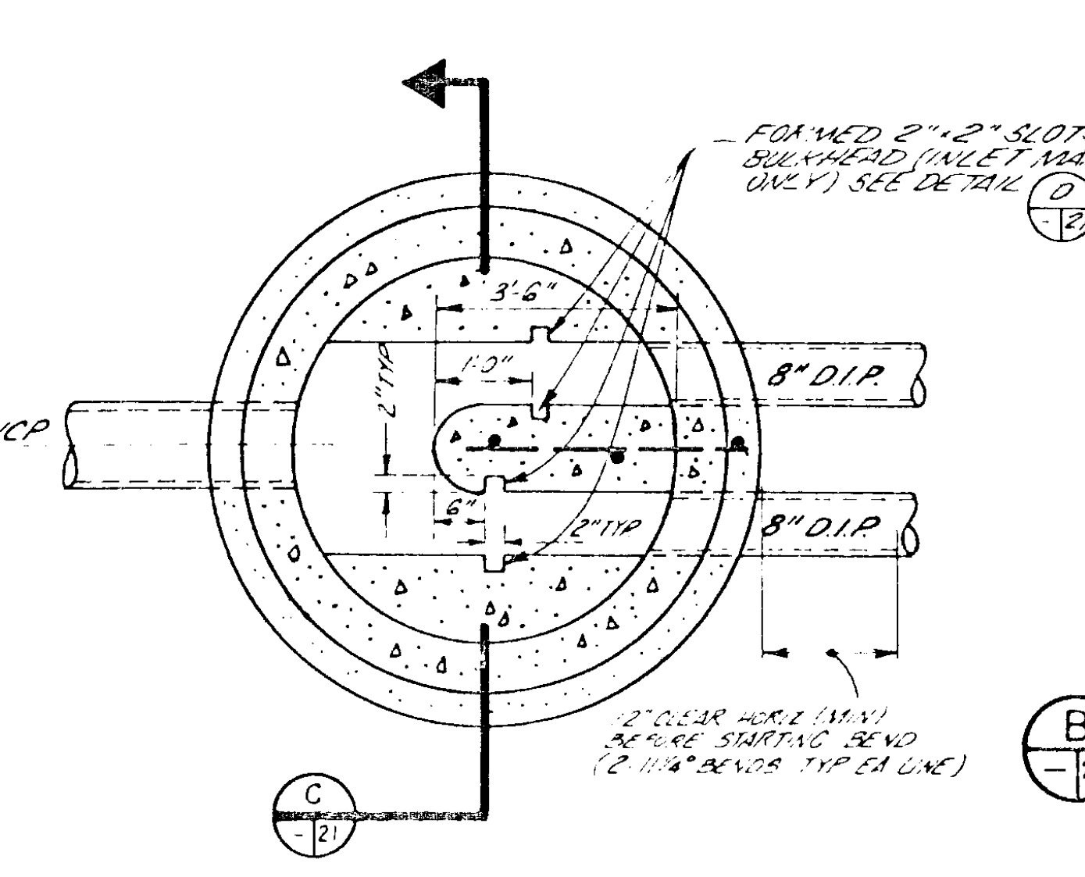
JOB NO 873702
DATE OF PHOTOGRAPHY 8-25-87
SCALE 1"=20'
AERO-GEODETIC CORPORATION
CONSULTING PHOTOGRAMMETRIC ENGINEERS
1600 WARBURTON AVENUE SANTA CLARA CALIFORNIA 95050

NOTE: Contractor shall exercise caution when installing the 18" CMP outfall, to avoid possible conflict with the sanitary sewer siphon.

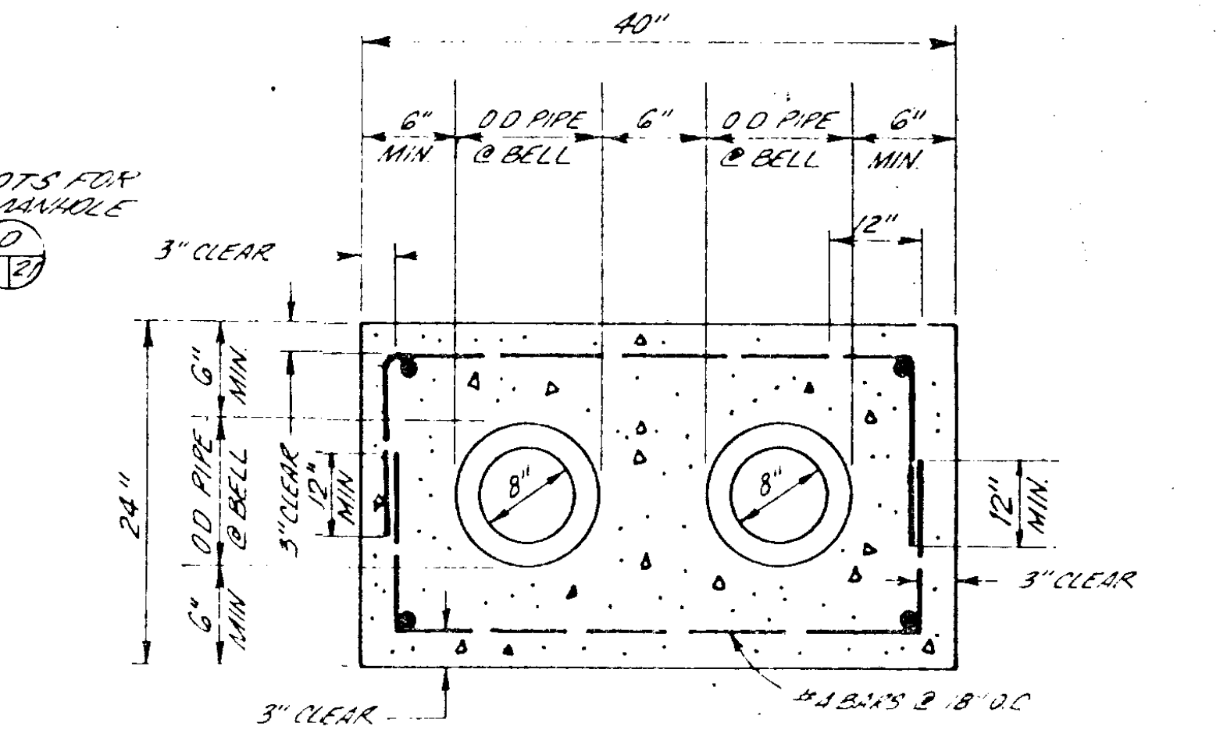
Minor adjustments may be made to the slope of the outfall pipe to provide a 1'-0" min. clear distance between the pipes.


UVAS
396' TWIN 8" POLYLINED D.I.P.
SEE SHEET 22 FOR BRIDGE PLAN FOR
SEE SHEET 14 FOR STORM OUTFALL DETAILS
THOMAS
ROAD
SEE SHEET 16
SEE SHT 17
12" VCP
11 1/4° BEND
3
4
5
6

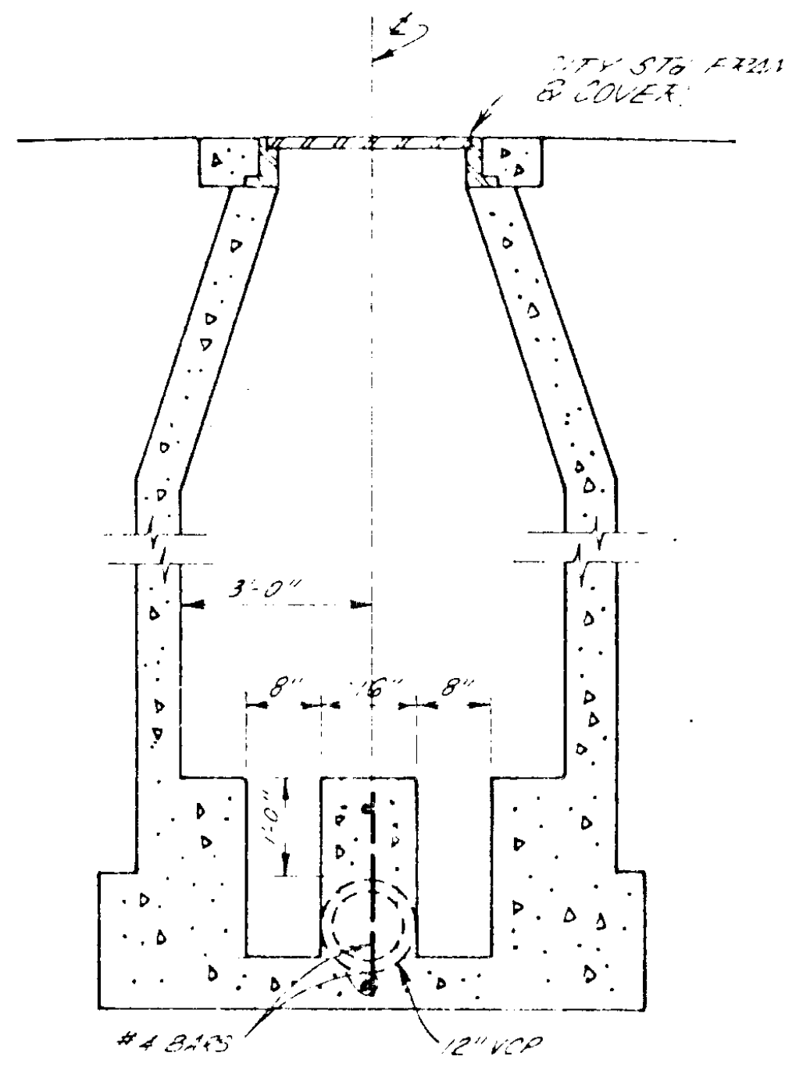
PLAN: SANITARY SEWER SIPHON CROSSING
1" = 20'



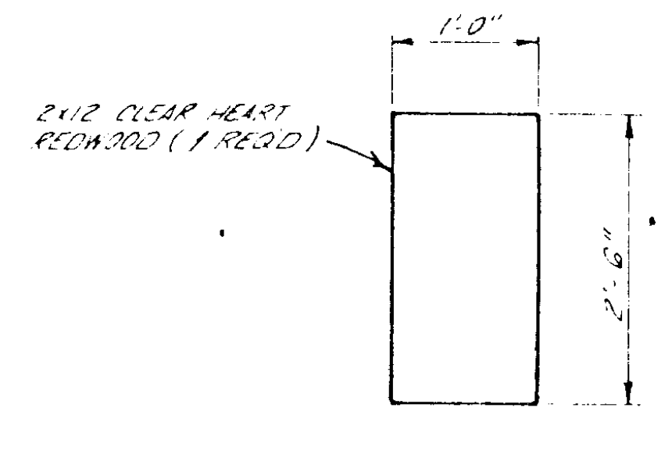
PLAN - INLET MANHOLE
N.T.S.



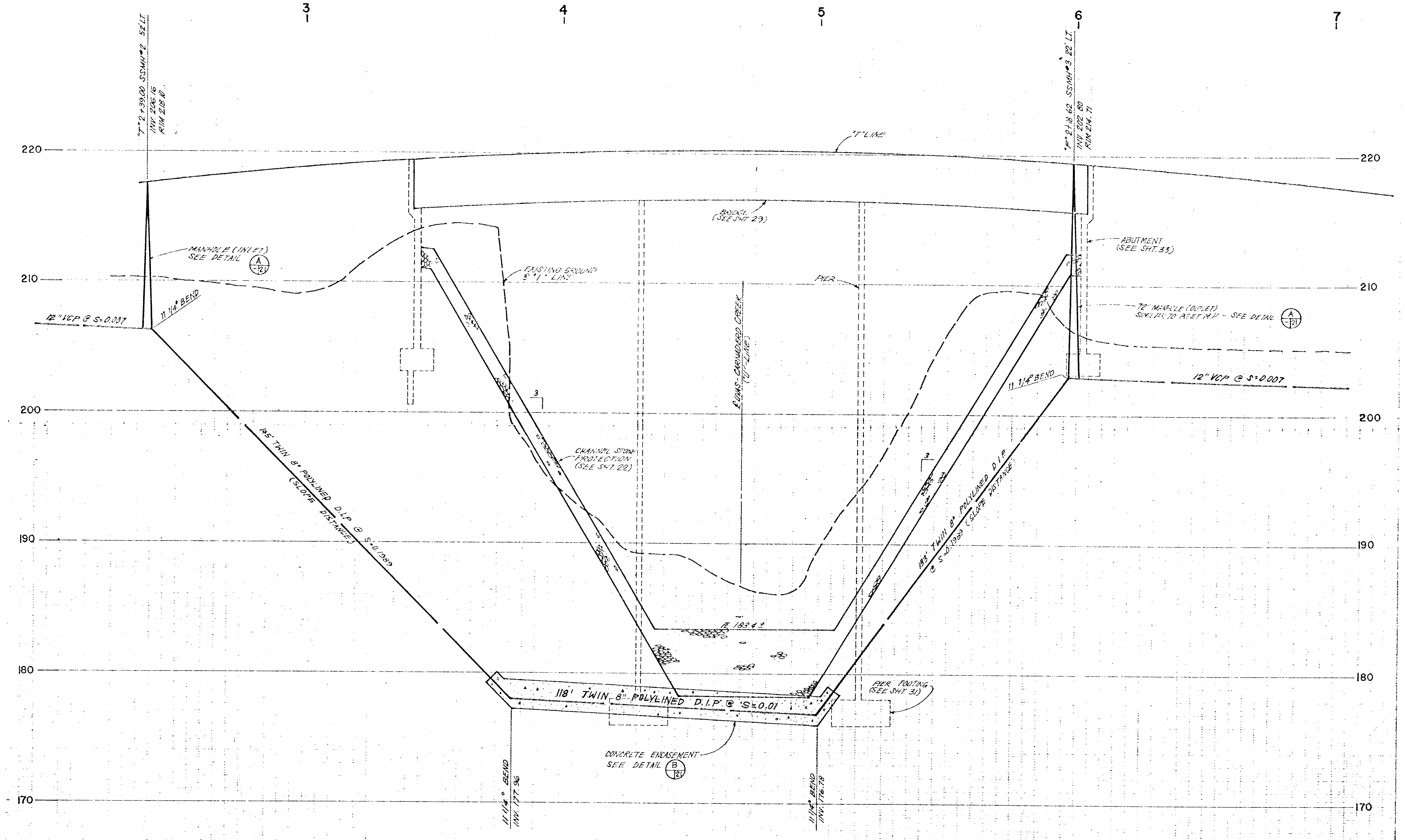
SECTION - CONCRETE PIPE ENCASEMENT
N.T.S.



SECTION - INLET MANHOLE
N.T.S.



BULKHEAD DETAIL
N.T.S.



PROFILE: SANITARY SEWER SIPHON CROSSING
HORIZ. : 1" = 20'
VERT. : 1" = 4'

TL
SDL/DVR
CIVIL

RUTH AND GOING, INC.
Civil Engineering Land Surveying

JOB #17273-130

Robert A. Smith 5/24/88
ROBERT A. SMITH RCE 20821 EXP. 9-30-89 DATE:

Santa Clara Valley Water District

ACCEPTED BY DISTRICT DATE 5/25/88
PROJECT ENGINEER RCE NO 25413 Bruce Wilson DIVISION ENGINEER RCE NO 158

REVISION	DATE	DESCRIPTION	BY	BY

DEPARTMENT OF THE ARMY
SACRAMENTO DISTRICT, CORPS OF ENGINEERS
SACRAMENTO, CALIFORNIA

DESIGNED
DRAWN
CHECKED

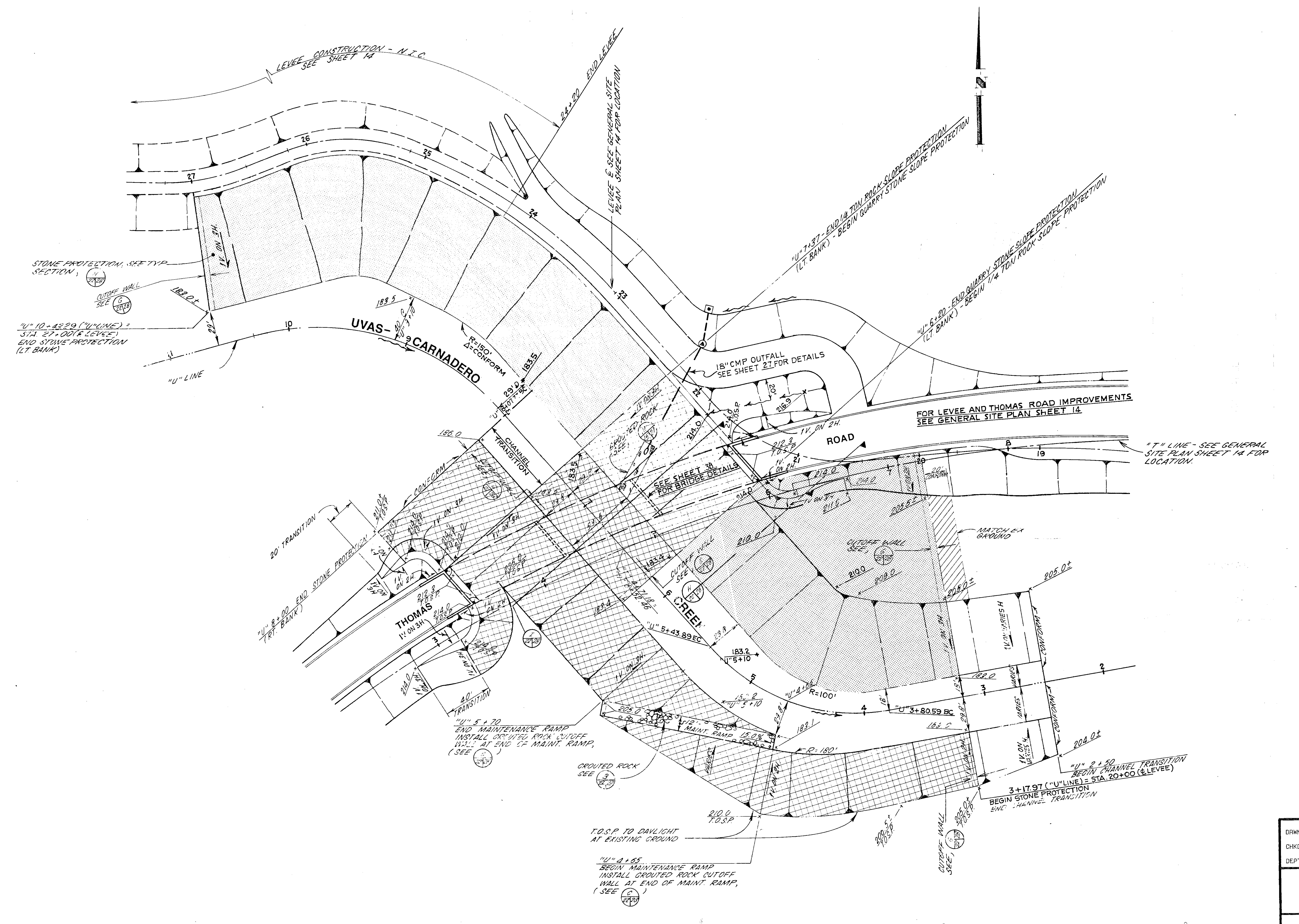
THOMAS ROAD AT UVAS CREEK
INVERTED SIPHON PLAN

SUBMITTED
DATE APPROVED
SCALE AS SHOWN
SPEC No
SHEET 21
FILE No

AERO GEODETIC CORPORATION

SANTA CLARA_CA Work Maps
SANTA CLARA_CA0251

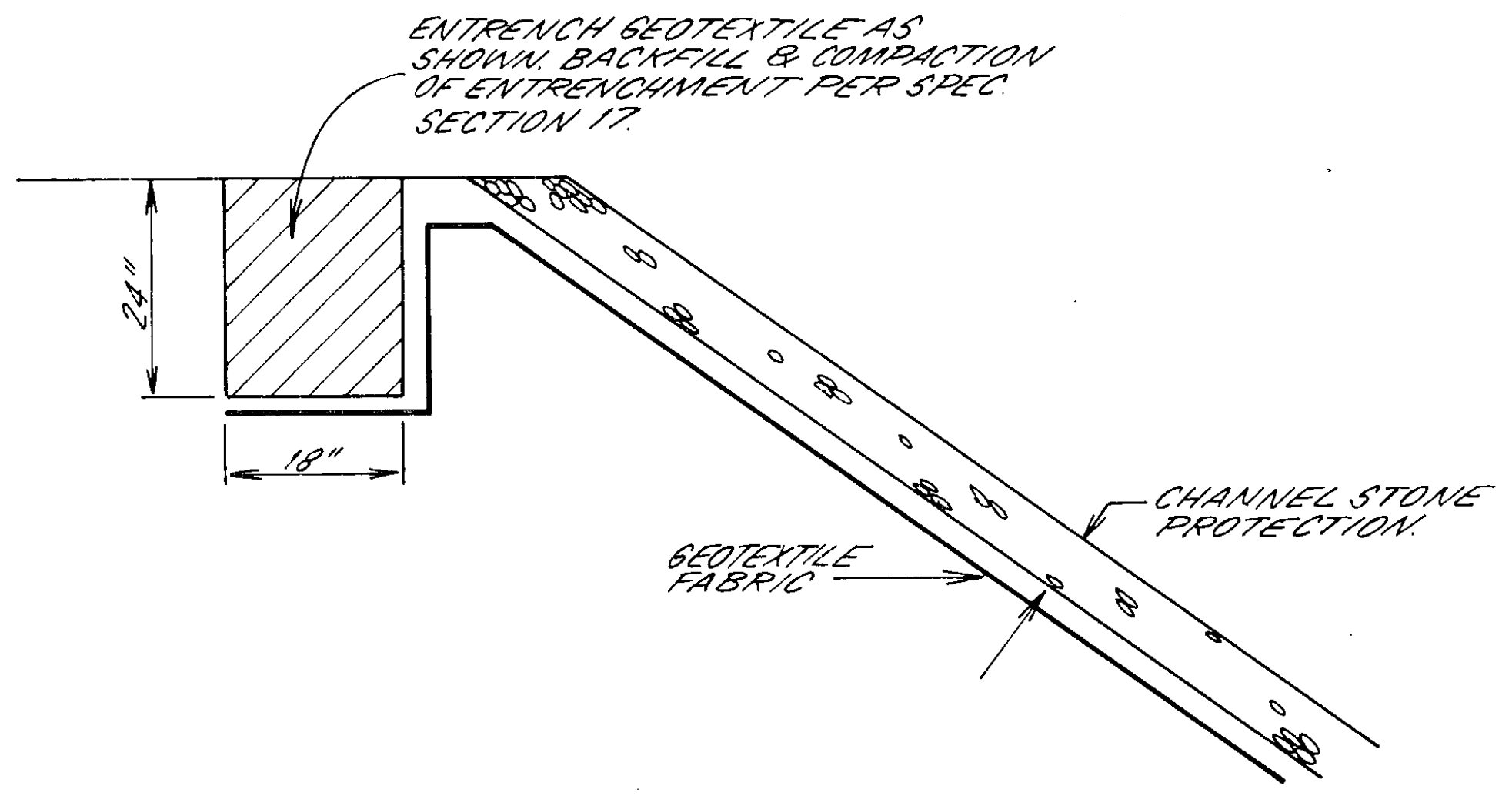
NOTES:
1. INCREASE STONE PROTECTION LAYER THICKNESS BY 50% WHEREVER STONE IS BEING PLACED UNDERWATER.


LEVEE CONSTRUCTION - N.I.C.
SEE SHEET 14
24+20 END LEVEE
LEVEE ℄ SEE GENERAL SITE PLAN SHEET 14 FOR LOCATION
27
26
25
24
23
22
21
20
19
8
7
6
5
4
3
2
10
11
STONE PROTECTION, SEE TYP SECTION; H 22|28
CUTOFF WALL SEE G 22|28
1V. ON 3H.
183.0±
"U" 10+43.29 ("U" LINE) = STA. 27+00 (℄ LEVEE) END STONE PROTECTION (LT. BANK)
29'
"U" LINE
UVAS-CARNADERO
183.5
40' ℄ "U" 9+10
R=150' Δ=CONFORM
29.0
"U" 8+07.77 BC
183.5
186.0
CHANNEL TRANSITION
CONFORM
CUTOFF WALL SEE
20' TRANSITION
211.0± T.O.S.P.
"U" 8+00 END STONE PROTECTION (RT. BANK)
214.0 T.O.S.P.
1V. ON 3H.
1V. ON 2H.
212.3 T.O.S.P.
214.0 T.O.S.P.
THOMAS
1V. ON 3H.
40' TRANSITION
"U" 5+70 END MAINTENANCE RAMP INSTALL GROUTED ROCK CUTOFF WALL AT END OF MAINT. RAMP, (SEE C 22|23)
205.0 T.O.S.P.
I 22|28
GROUTED ROCK SEE M 15|27
SEE SHEET 38 FOR BRIDGE DETAILS
183.4
71.18'
52.46
CUTOFF WALL SEE H 22|28
CREEK
"U" 5+43.89 EC
29.8
183.2 "U" 5+10
1V. ON 3H.
205.0
12' MAINT. RAMP 15.0%
GROUTED ROCK SEE 3 22|23
VARIES
210.0 T.O.S.P.
T.O.S.P. TO DAYLIGHT AT EXISTING GROUND
"U" 4+65 BEGIN MAINTENANCE RAMP INSTALL GROUTED ROCK CUTOFF WALL AT END OF MAINT. RAMP, (SEE C 22|23)
18" CMP OUTFALL SEE SHEET 27 FOR DETAILS
20'
216.9
214.0 T.O.S.P.
1V. ON 2H.
212.3 T.O.S.P.
ROAD
"U" 7+37 - END 1/4 TON ROCK SLOPE PROTECTION (LT. BANK) - BEGIN QUARRY STONE SLOPE PROTECTION
"U" 6+20 - END QUARRY STONE SLOPE PROTECTION (LT. BANK) - BEGIN 1/4 TON ROCK SLOPE PROTECTION
FOR LEVEE AND THOMAS ROAD IMPROVEMENTS SEE GENERAL SITE PLAN SHEET 14
"T" LINE - SEE GENERAL SITE PLAN SHEET 14 FOR LOCATION.
20' CONFORM
214.0
211.0
1V. ON 3H.
205.5±
210.0
MATCH EX GROUND
CUTOFF WALL SEE G 22|28
210.0
209.0
205.0±
205.0±
1V. ON VARIES H
CONFORM
R=100'
"U" 4+65
18'
"U" 3+80.59 BC
183.0
15'
VARIES
29.8'
183.0
183.1
R=180'
1V. ON 2H.
1V. ON VARIES H
204.0±
"U" 2+50 BEGIN CHANNEL TRANSITION
3+17.97 ("U" LINE) = STA. 20+00 (℄ LEVEE) BEGIN STONE PROTECTION END CHANNEL TRANSITION
200.5± T.O.S.P.
205.0± T.O.S.P.
CUTOFF WALL SEE G 22|28

SCALE: 1" = 40'
0 10 20 30 40 80 120

▨ SLOPED BANK WITH 1/4 TON ROCK SLOPE PROTECTION.

▒ SLOPED BANK WITH QUARRY STONE PROTECTION.


ENTRENCH GEOTEXTILE AS SHOWN. BACKFILL & COMPACTION OF ENTRENCHMENT PER SPEC SECTION 17.
24"
18"
GEOTEXTILE FABRIC
CHANNEL STONE PROTECTION.

A 26|22 GEOTEXTILE TERMINATION AT TOP OF SLOPE
N.T.S.

ENVIRONMENTAL ENHANCEMENT THRU ENGINEERING

DRWN.: MvO
CHKD.: R.Goto, DVR
DEPT.: CIVIL

RUTH AND GOING, INC.
Civil Engineering Land Surveying
2180 LUNDY AVE. SAN JOSE, CA. 95131 (408) 943-1840
JOB.# 17273-130

Robert A. Smith
ROBERT A. SMITH RCE 20821 EXP. 9-30-89
DATE: 5-24-88

Santa Clara Valley Water District

ACCEPTED BY DISTRICT: DATE 5/25/88

PROJECT ENGINEER R.C.E. NO. 25413
Bruce Wilson
DIVISION ENGINEER R.C.E. NO. 15851

REVISION	DATE	DESCRIPTION	BY	BY
△				
△				

DESIGNED:
DRAWN:
CHECKED:

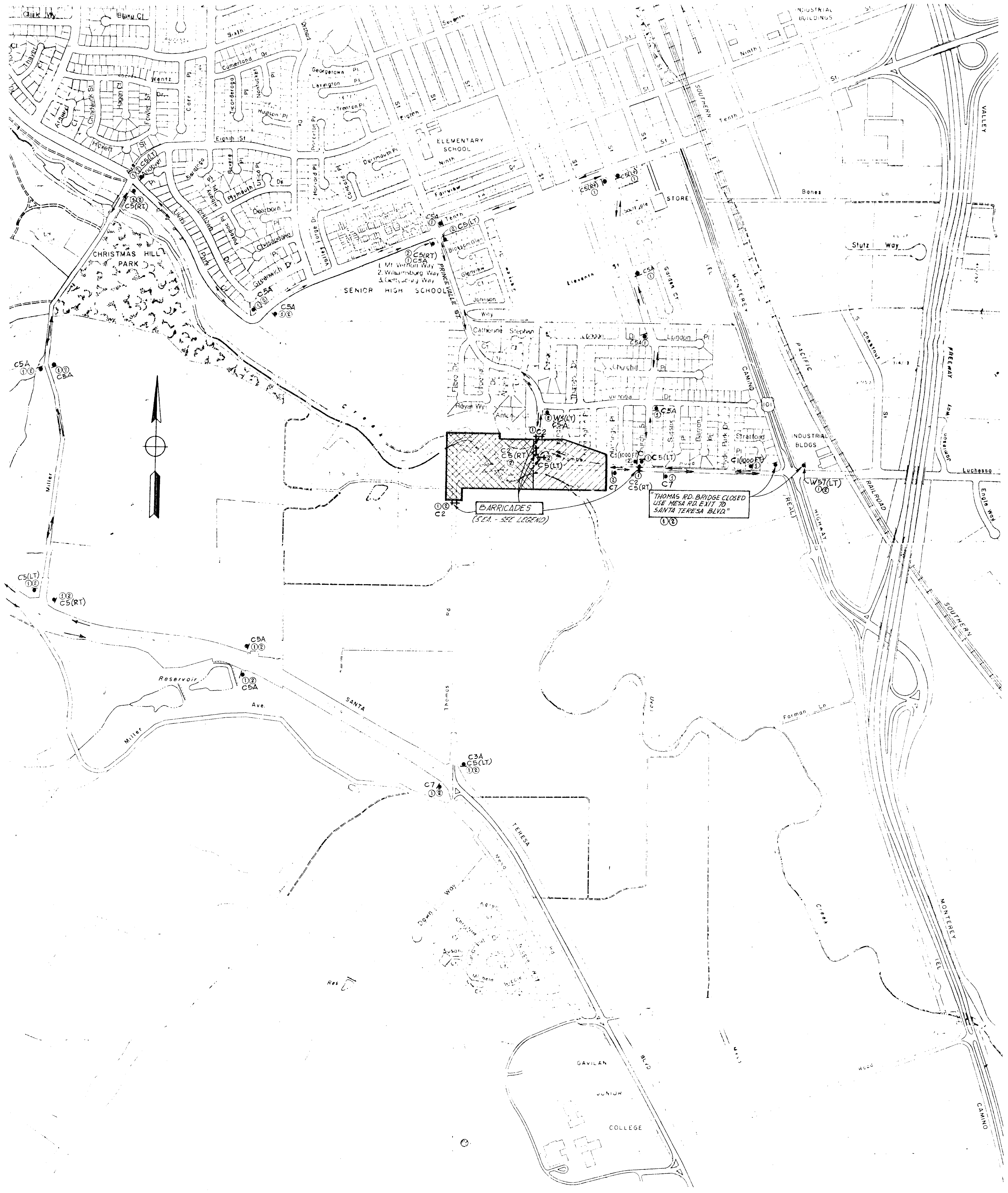
THOMAS ROAD AT UVAS CREEK
CHANNEL STONE PROTECTION PLAN

SUBMITTED:
DATE APPROVED
SCALE AS SHOWN
SPEC. No.
SHEET 22
FILE No.

SANTA CLARA_CA Work Maps
SANTA CLARA_CA0252

JOB NO. 873702
DATE OF PHOTOGRAPHY 8-25-87
SCALE 1" = 40'

AERO-GEODETIC CORPORATION
CONSULTING PHOTOGRAMMETRIC ENGINEERS
1600 WARBURTON AVENUE SANTA CLARA CALIFORNIA 95050



NOTES:

1. PHASE (ROUTE) 1 DETOUR: PROJECT START TO SEPTEMBER 22, 1988
2. PHASE (ROUTE) 2 DETOUR: SEPTEMBER 22,1988 TO PROJECT COMPLETION
3. REFER TO SPEC. SECTION 24.07 FOR ADDITIONAL DETOUR AND TRAFFIC PHASING INFORMATION.

LEGEND

▨	APPROXIMATE LIMITS OF CONSTRUCTION - PHASE 1
▩	APPROXIMATE LIMITS OF CONSTRUCTION - PHASE 2
● C5(RT)	SIGN/TYPE (REF: CALTRANS STD. TRAFFIC MANUAL)
①②	PHASE(S) TO BE INSTALLED.
┼──┼	CALTRANS STD. TYPE III BARRICADE W/FLASHING BEACON

ENVIRONMENTAL ENHANCEMENT THRU ENGINEERING

DRWN PH/TL
CHKD DOL
DEPT CIVIL

RUTH AND GOING, INC.
Civil Engineering Land Surveying
2180 ... AVE SAN JOSE CA 95131 (408) 943-1840

JOB # 17273-130

Robert A. Smith
ROBERT A. SMITH RCE 20821 EXP. 9-30-89
DATE: 5/24/88

Santa Clara Valley Water District

ACCEPTED BY DISTRICT: DATE 5/25/88

PROJECT ENGINEER R.C.E. NO 25413
Bruce Wilson
DIVISION ENGINEER RCE NO 15851

REVISION	DATE	DESCRIPTION	BY	BY
△				
△				

DEPARTMENT OF THE ARMY
SACRAMENTO DISTRICT, CORPS OF ENGINEERS
SACRAMENTO, CALIFORNIA

DESIGNED
DRAWN
CHECKED

THOMAS ROAD AT UVAS CREEK
DETOUR PLAN

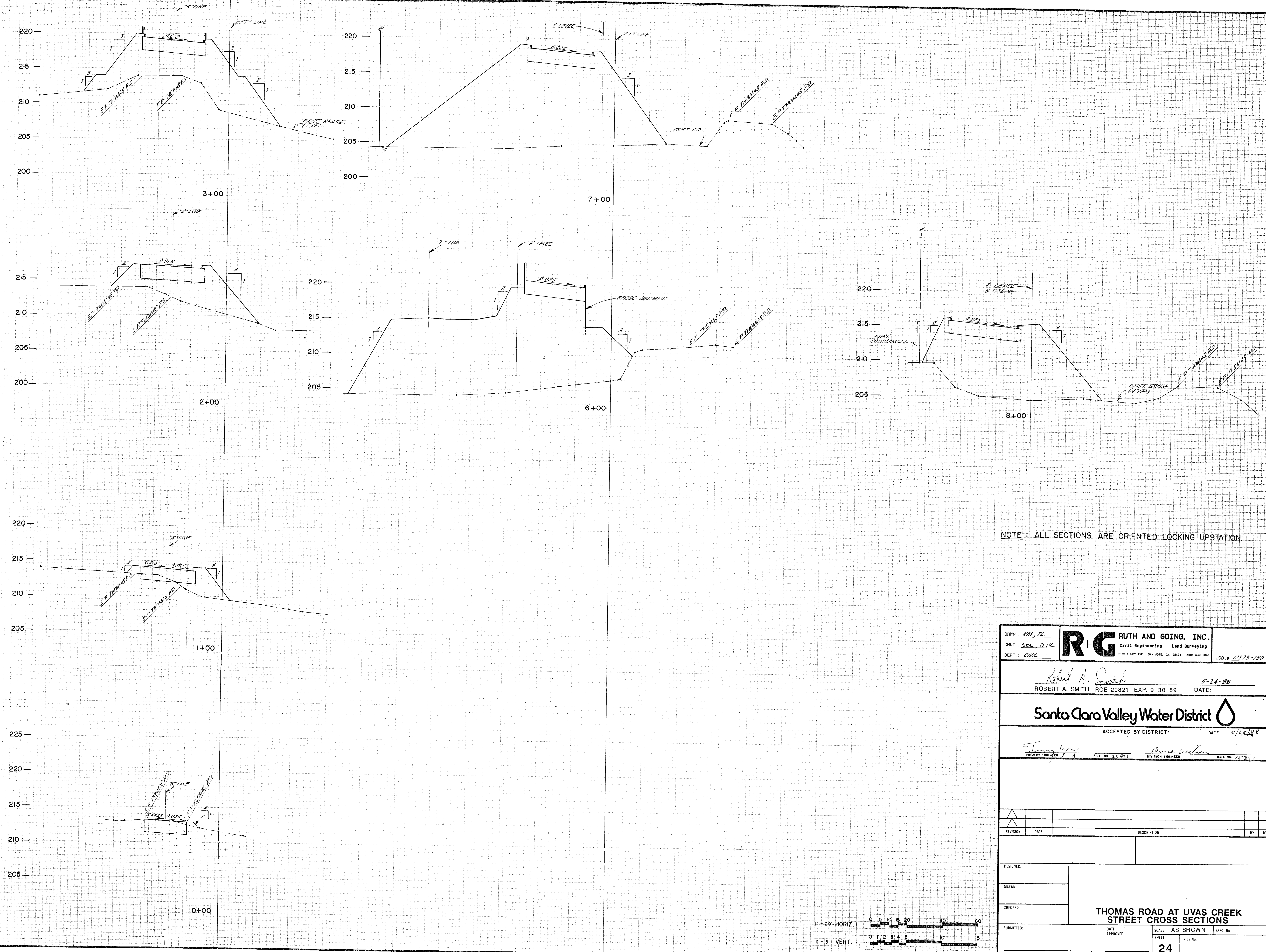
SUBMITTED

DATE APPROVED

SCALE
SPEC No
SHEET 23
FILE No

AERO-GEODETIC CORPORATION
CONSULTING PHOTOGRAMMETRIC ENGINEERS

FUNCTION ANALYSIS - VE PAYS



NOTE : ALL SECTIONS ARE ORIENTED LOOKING UPSTATION.

ENVIRONMENTAL
ENHANCEMENT
THRU ENGINEERING

DRWN.: KM, TL.
CHKD.: SDL, DVR
DEPT.: CIVIL

RUTH AND GOING, INC.
Civil Engineering Land Surveying
2180 LUNDY AVE. SAN JOSE, CA. 95131 (408) 943-1840

JOB.# 17273-130

Robert A. Smith
ROBERT A. SMITH RCE 20821 EXP. 9-30-89
DATE: 5-24-88

Santa Clara Valley Water District

ACCEPTED BY DISTRICT: DATE 5/25/88

PROJECT ENGINEER R.C.E. NO. 25413
Bruce Wilson
DIVISION ENGINEER R.C.E. NO. 15851

REVISION	DATE	DESCRIPTION	BY	BY
△				
△				

DESIGNED:
DRAWN
CHECKED:
SUBMITTED:
DATE APPROVED

THOMAS ROAD AT UVAS CREEK
STREET CROSS SECTIONS

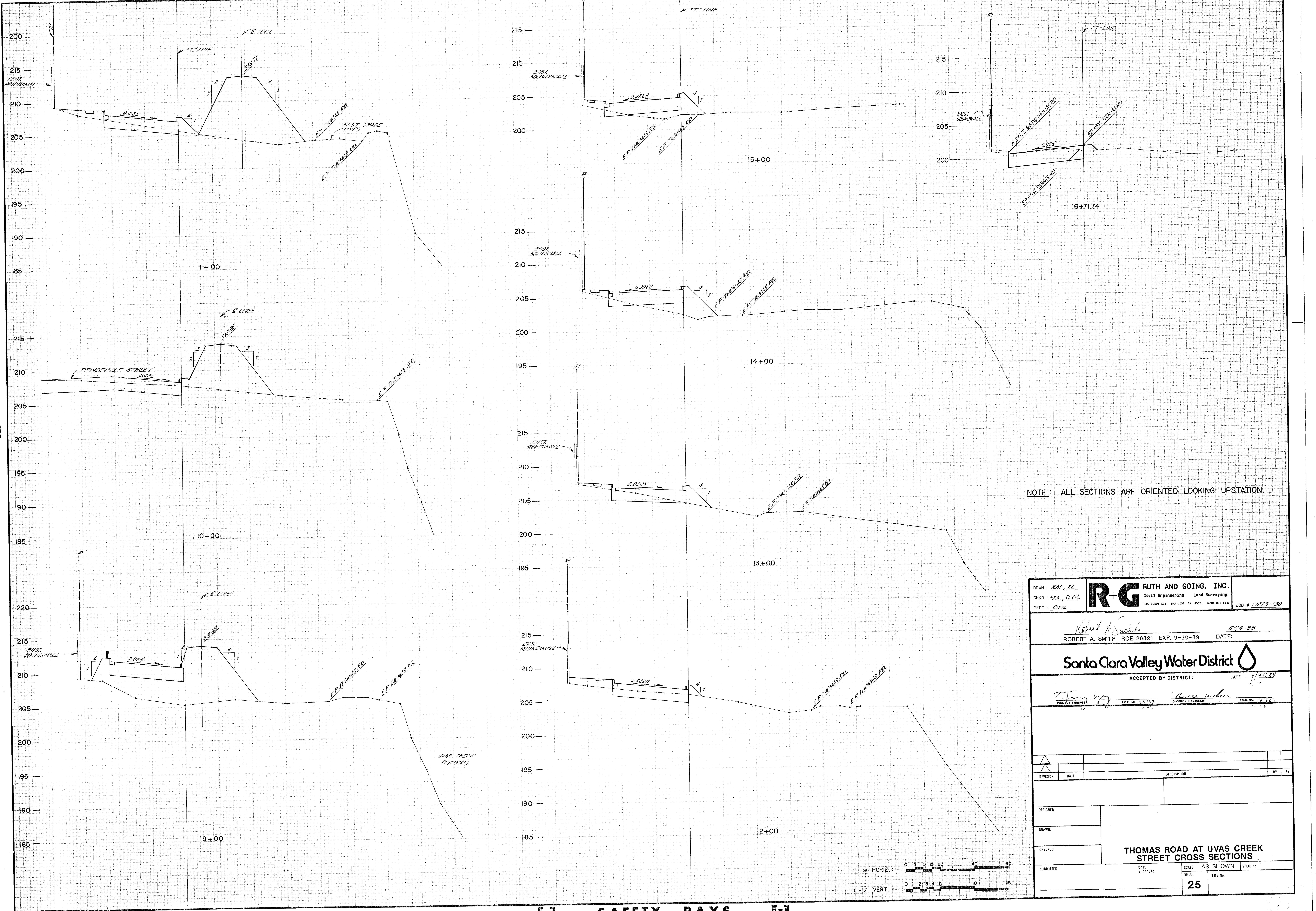
SCALE AS SHOWN
SPEC. No.
SHEET 24
FILE No.

SAFETY PAYS

SANTA CLARA_CA Work Maps
SANTA CLARA_CA0254

AERO-GEODETIC CORPORATION
CONSULTING PHOTOGRAMMETRIC ENGINEERS
1600 WARBURTON AVENUE SANTA CLARA CALIFORNIA 95050

ENVIRONMENTAL ENHANCEMENT THRU ENGINEERING



NOTE: ALL SECTIONS ARE ORIENTED LOOKING UPSTATION.

DRWN.: K.M., T.L.
CHKD.: SDL, DVR
DEPT.: CIVIL

RUTH AND GOING, INC.
Civil Engineering Land Surveying
2180 LUNDY AVE. SAN JOSE, CA. 95131 (408) 943-1840

JOB.# 17273-130

Robert A. Smith 5-24-88
ROBERT A. SMITH RCE 20821 EXP. 9-30-89 DATE:

Santa Clara Valley Water District

ACCEPTED BY DISTRICT: DATE 5/25/88

PROJECT ENGINEER R.C.E. NO. 25413 Bruce Wilson DIVISION ENGINEER R.C.E. NO. 16821

REVISION	DATE	DESCRIPTION	BY	BY
△				
△				

DESIGNED

DRAWN

CHECKED

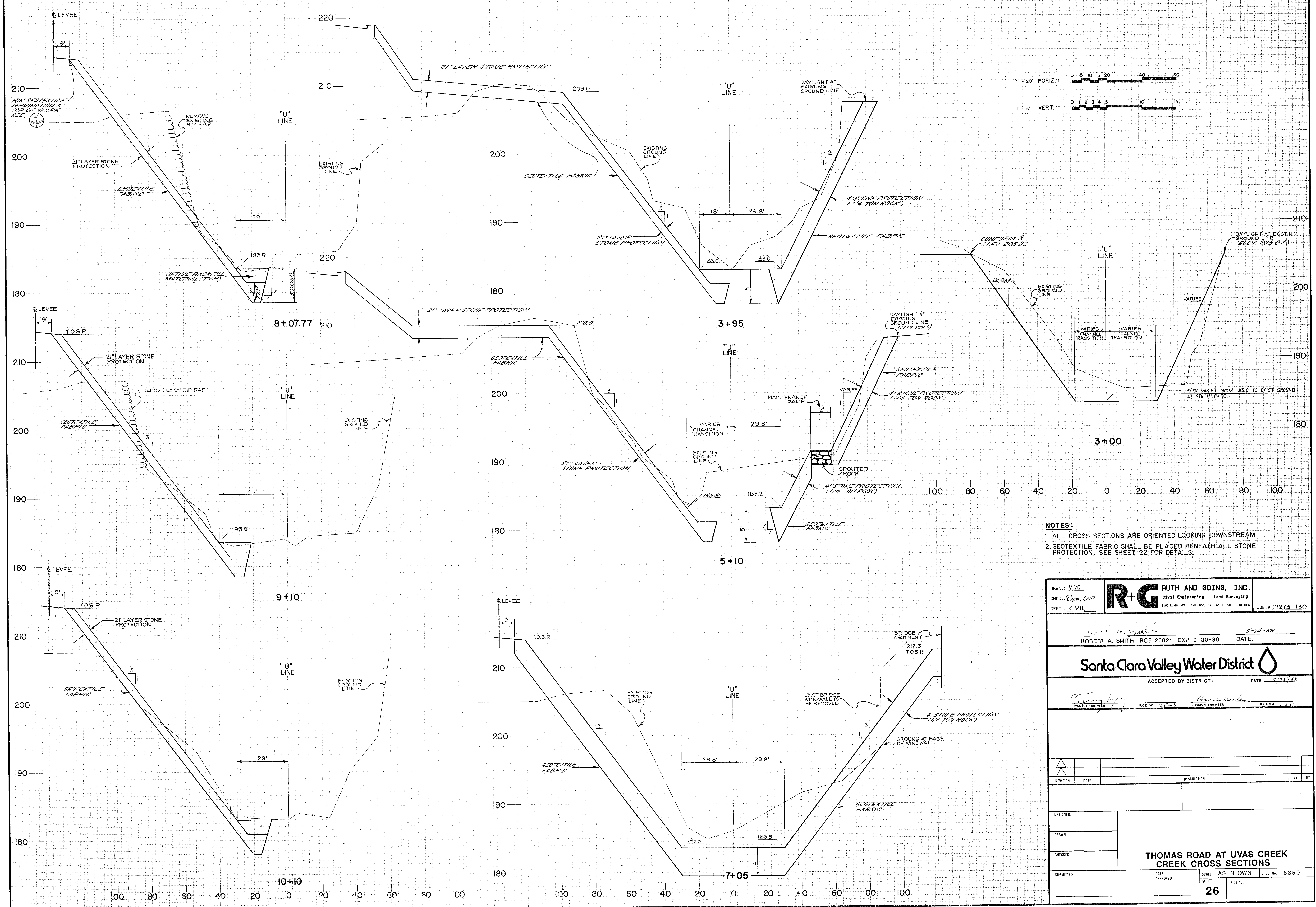
SUBMITTED

DATE APPROVED

THOMAS ROAD AT UVAS CREEK
STREET CROSS SECTIONS

SCALE AS SHOWN
SPEC. No.
SHEET 25
FILE No.

AERO-GEODETIC CORPORATION
CONSULTING PHOTOGRAMMETRIC ENGINEERS
1600 WARBURTON AVENUE SANTA CLARA CALIFORNIA 95050



ENVIRONMENTAL
ENHANCEMENT
THRU ENGINEERING

NOTES:

1. ALL CROSS SECTIONS ARE ORIENTED LOOKING DOWNSTREAM
2. GEOTEXTILE FABRIC SHALL BE PLACED BENEATH ALL STONE PROTECTION. SEE SHEET 22 FOR DETAILS.

DRWN.: M.VO.
CHKD.: R.Goto, DVR
DEPT.: CIVIL

R+G RUTH AND GOING, INC.
Civil Engineering Land Surveying
2180 LUNDY AVE. SAN JOSE, CA. 95131 (408) 943-1840

JOB.# 17273-130

ROBERT A. SMITH RCE 20821 EXP. 9-30-89
DATE: 5-24-88

Santa Clara Valley Water District

ACCEPTED BY DISTRICT: DATE 5/25/88

PROJECT ENGINEER R.C.E. NO. 25443
Bruce Wilson
DIVISION ENGINEER R.C.E. NO. 13861

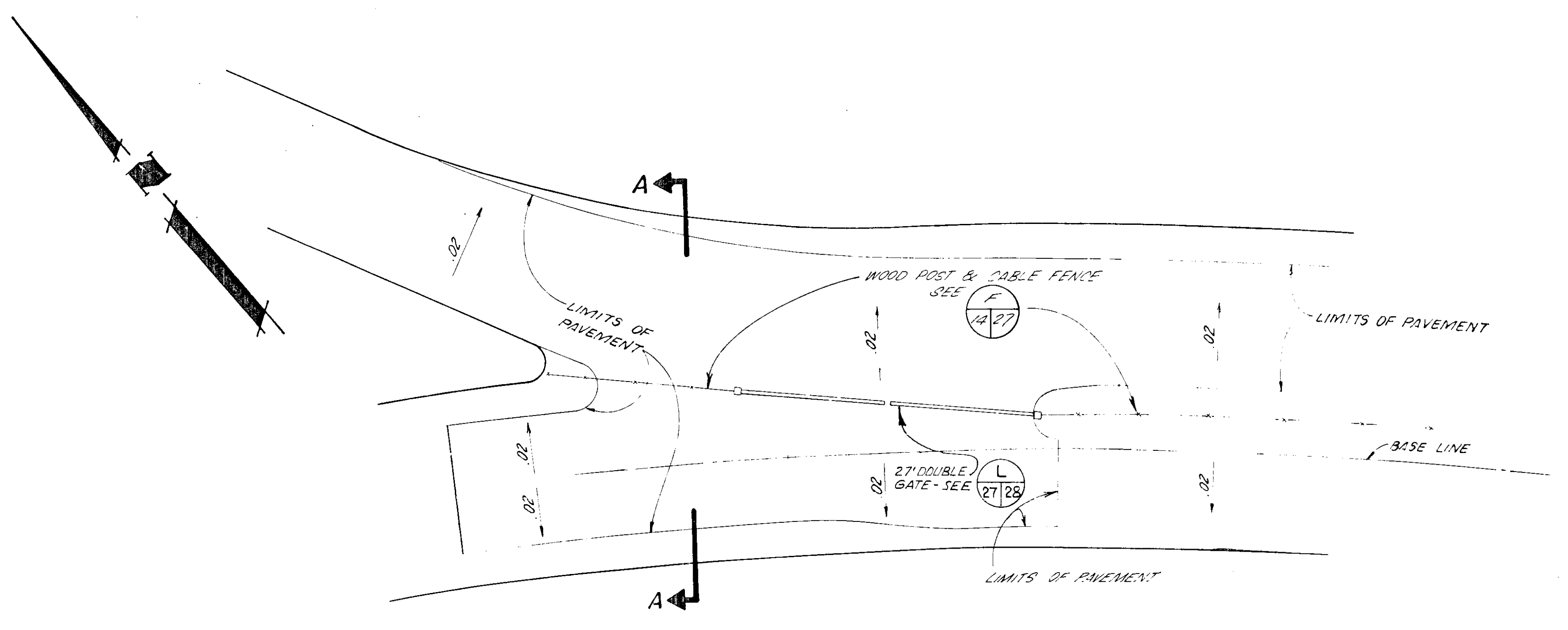
REVISION	DATE	DESCRIPTION	BY	BY
△				
△				

DESIGNED:
DRAWN:
CHECKED:

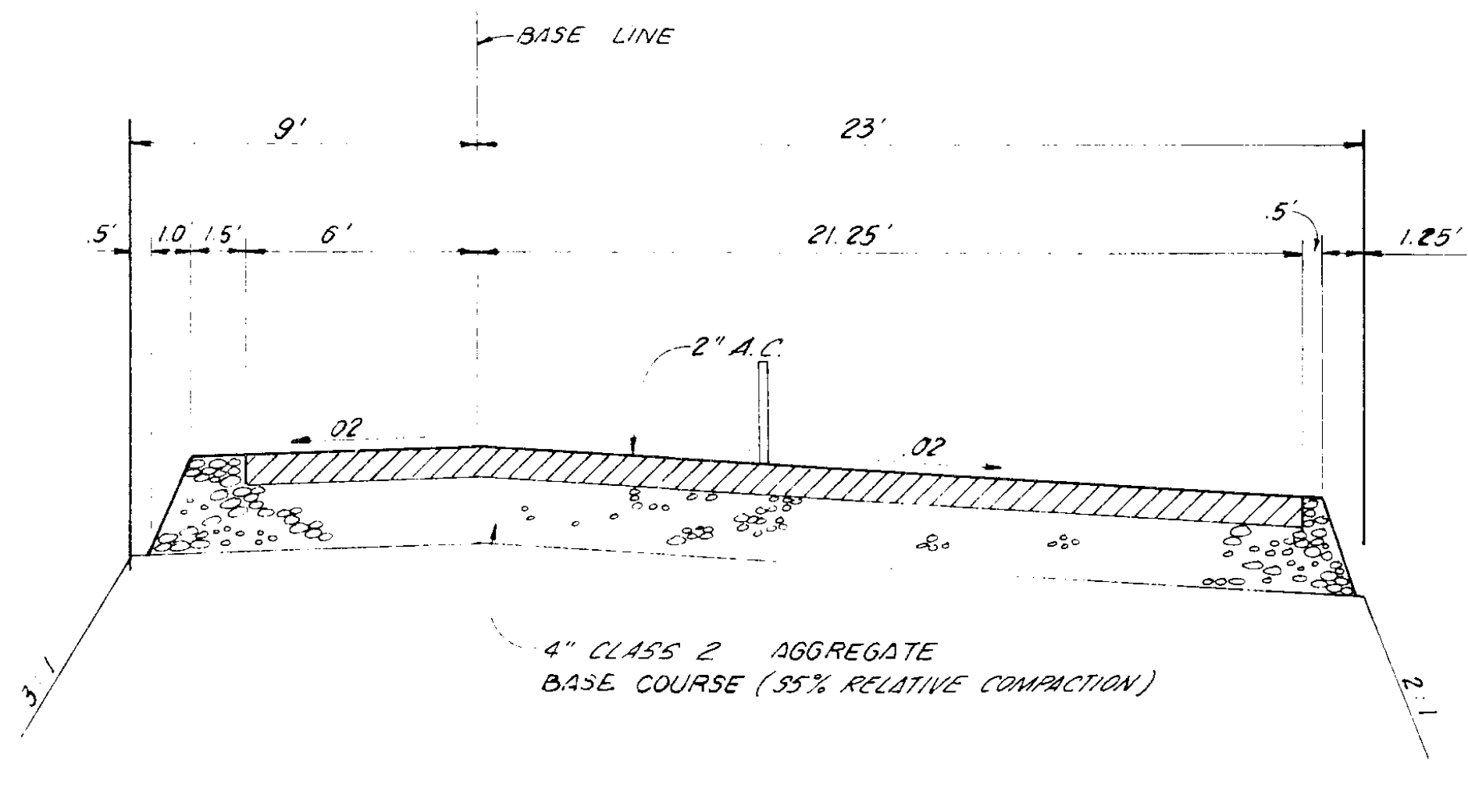
THOMAS ROAD AT UVAS CREEK
CREEK CROSS SECTIONS

SUBMITTED:
DATE APPROVED
SCALE AS SHOWN
SPEC. No. 8350
SHEET 26
FILE No.

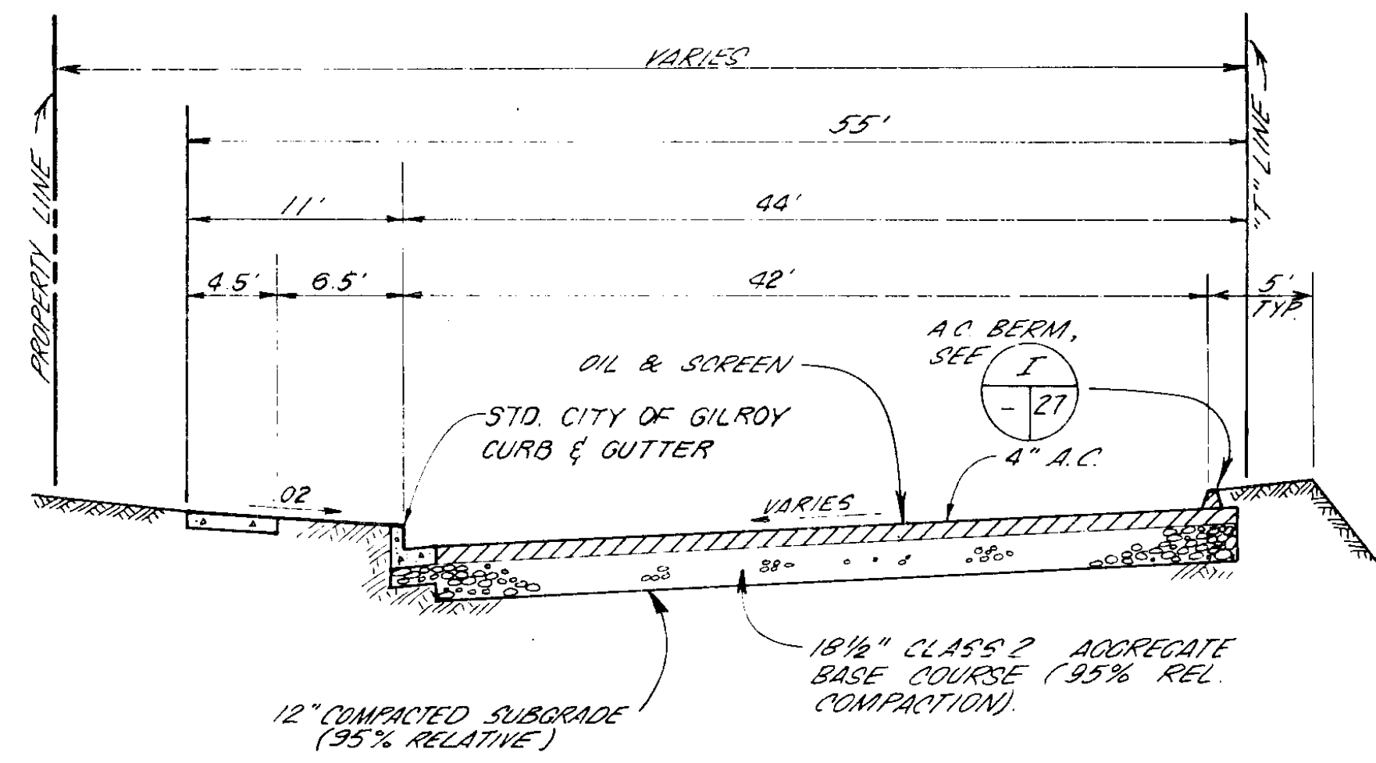
SANTA CLARA_CA Work Maps
SANTA CLARA_CA0256



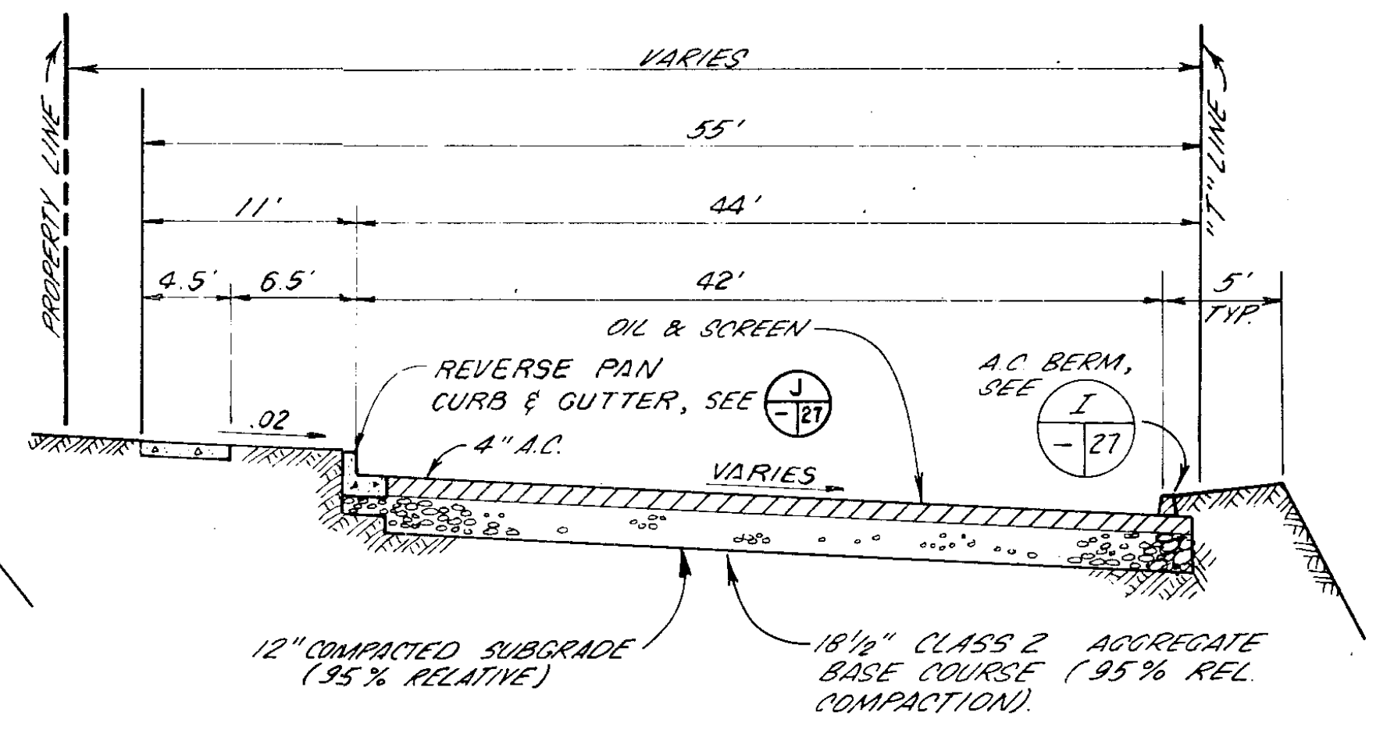
Ⓐ 14|27 MAINTENANCE ROAD/DRIVEWAY 1" = 10'



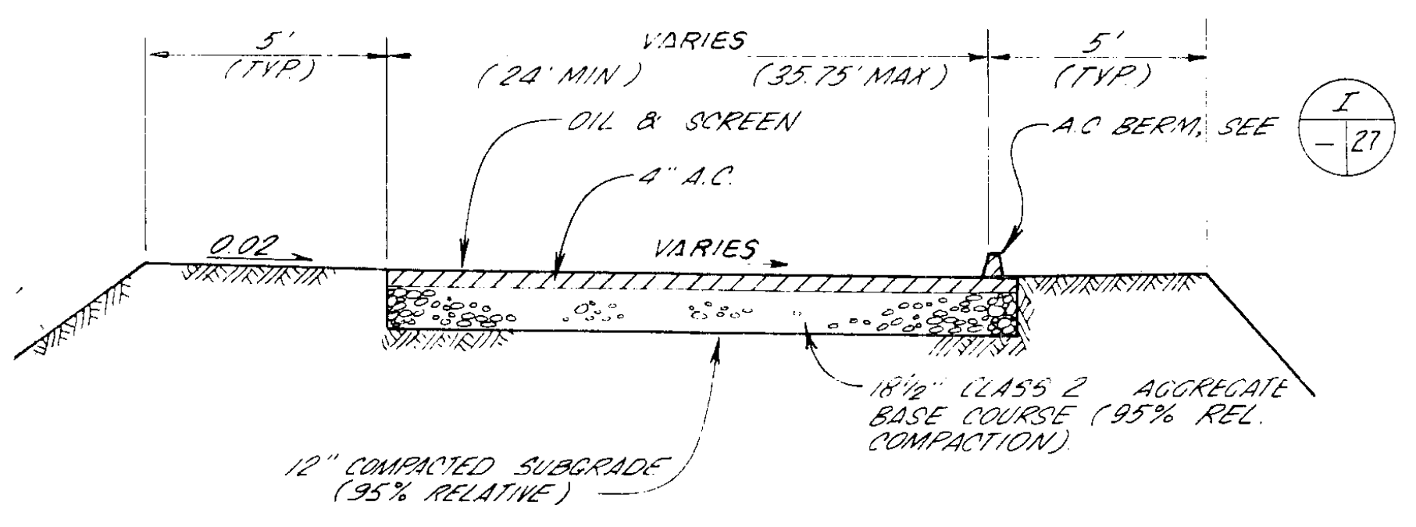
SECTION A-A N.T.S.


PROPERTY LINE
"T" LINE
VARIES
55'
11'
44'
4.5'
6.5'
42'
5' TYP.
OIL & SCREEN
STD. CITY OF GILROY CURB & GUTTER
A.C. BERM, SEE I -|27
4" A.C.
.02
VARIES
12" COMPACTED SUBGRADE (95% RELATIVE)
18½" CLASS 2 AGGREGATE BASE COURSE (95% REL. COMPACTION).

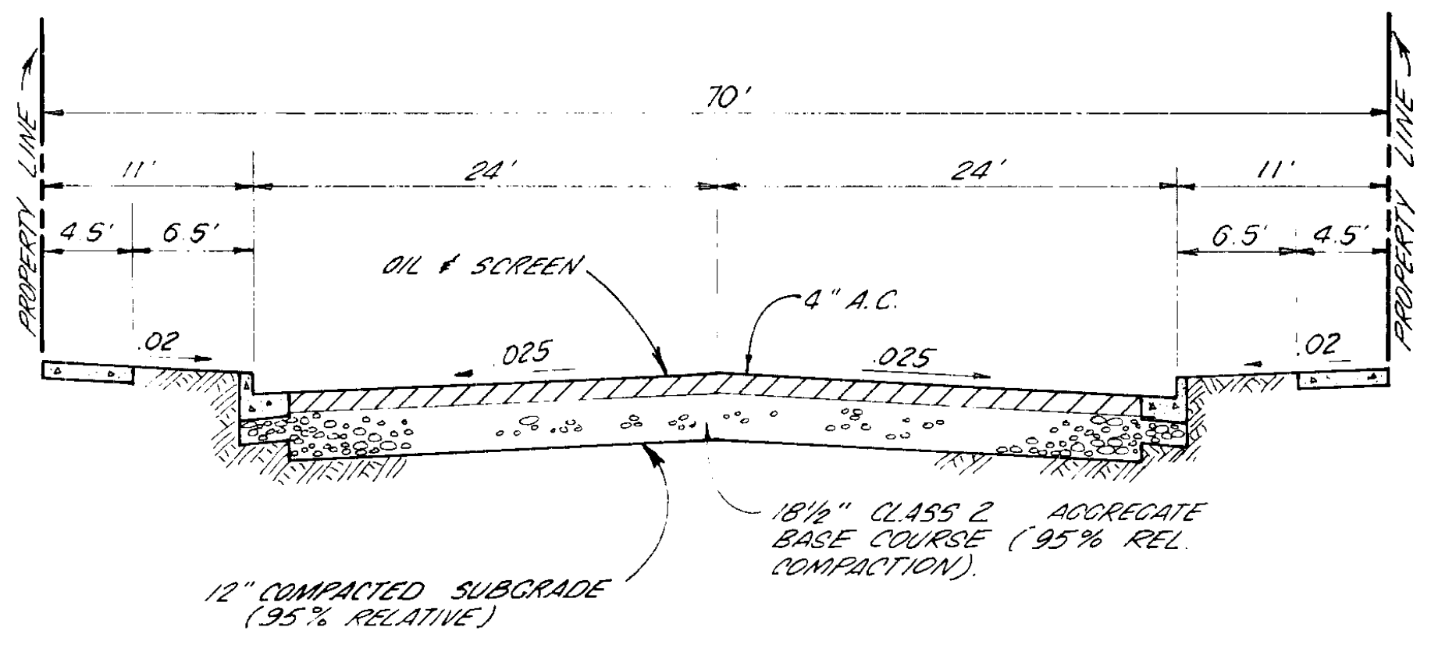
Ⓑ 19|27 THOMAS ROAD N.T.S.


PROPERTY LINE
"T" LINE
VARIES
55'
11'
44'
4.5'
6.5'
42'
5' TYP.
OIL & SCREEN
REVERSE PAN CURB & GUTTER, SEE J -|27
4" A.C.
A.C. BERM, SEE I -|27
.02
VARIES
12" COMPACTED SUBGRADE (95% RELATIVE)
18½" CLASS 2 AGGREGATE BASE COURSE (95% REL. COMPACTION).

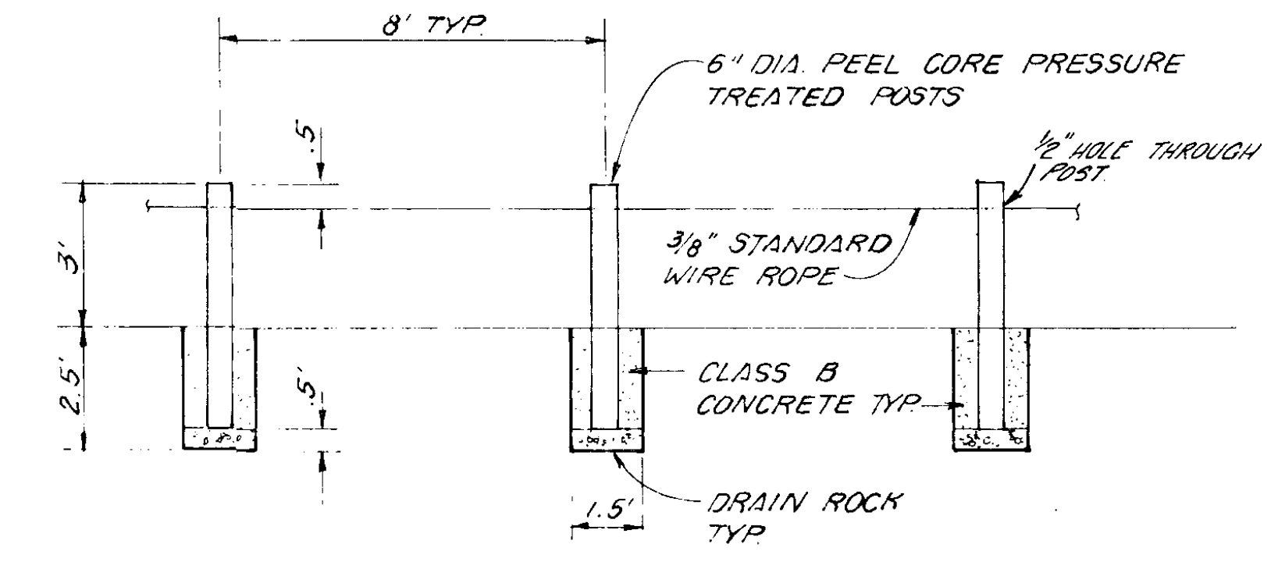
Ⓒ 18|27 THOMAS ROAD N.T.S.


5' (TYP)
VARIES
(24' MIN)
(35.75' MAX)
5' (TYP)
OIL & SCREEN
4" A.C.
A.C. BERM, SEE I -|27
0.02
VARIES
12" COMPACTED SUBGRADE (95% RELATIVE)
18½" CLASS 2 AGGREGATE BASE COURSE (95% REL. COMPACTION)

Ⓓ 16|27 THOMAS ROAD N.T.S

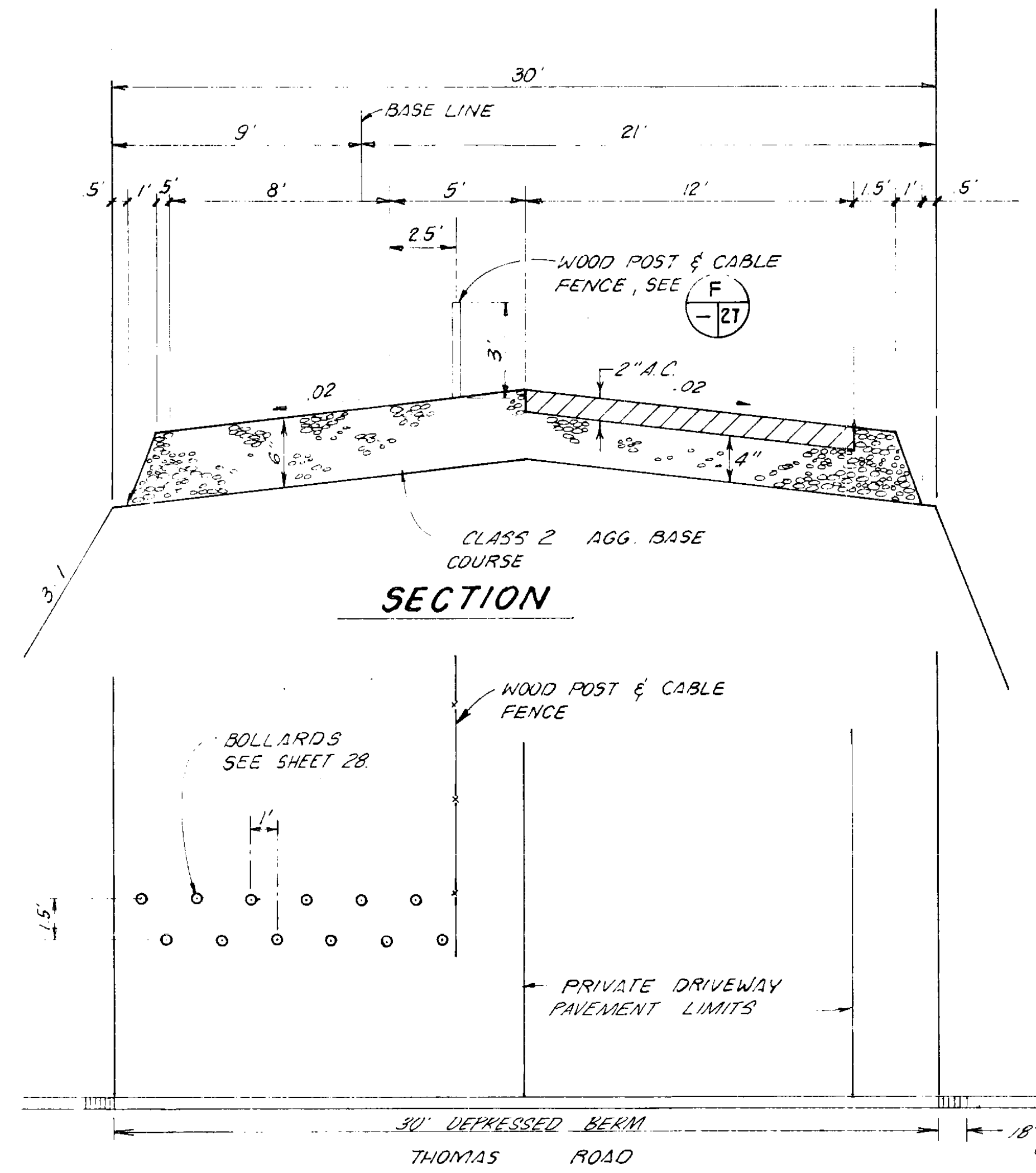

PROPERTY LINE
PROPERTY LINE
70'
11'
24'
24'
11'
4.5'
6.5'
6.5'
4.5'
OIL & SCREEN
4" A.C.
.02
.025
.025
.02
12" COMPACTED SUBGRADE (95% RELATIVE)
18½" CLASS 2 AGGREGATE BASE COURSE (95% REL. COMPACTION).

Ⓔ 18|27 PRINCEVALLE STREET N.T.S.

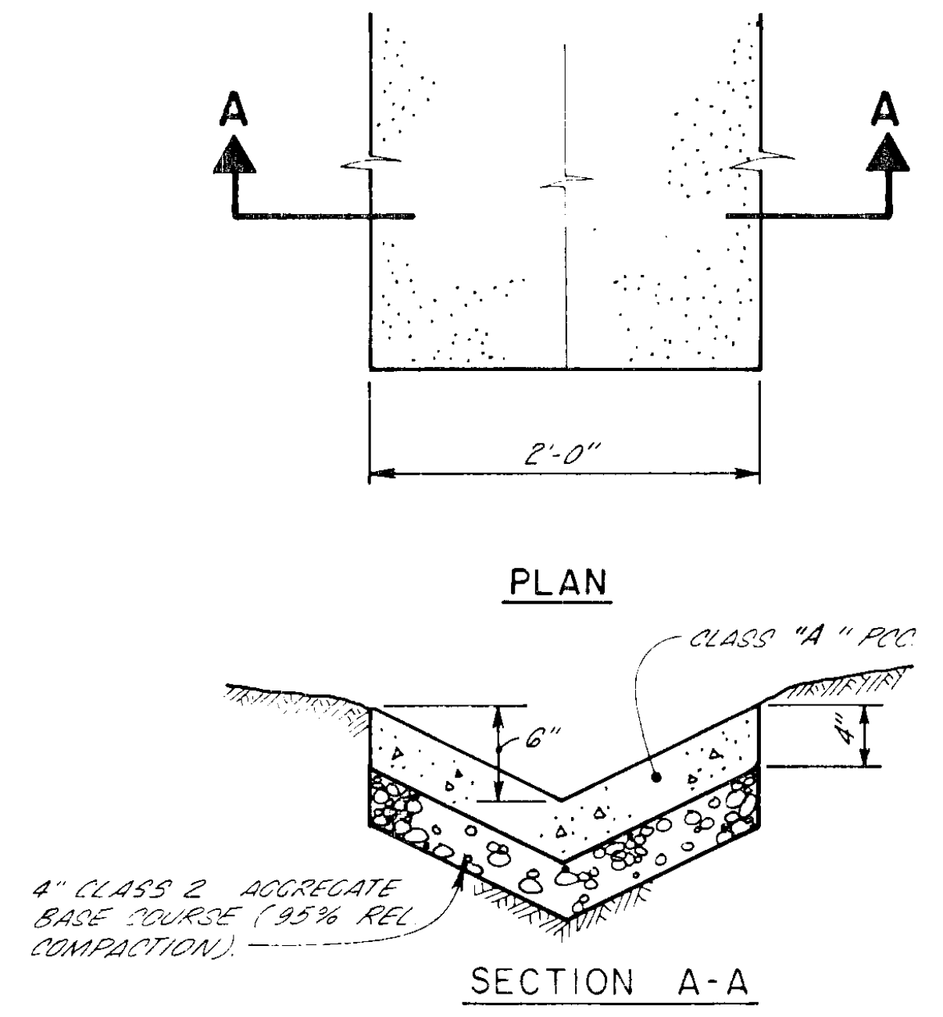


Ⓕ 14|27 WOOD POST & CABLE FENCE N.T.S

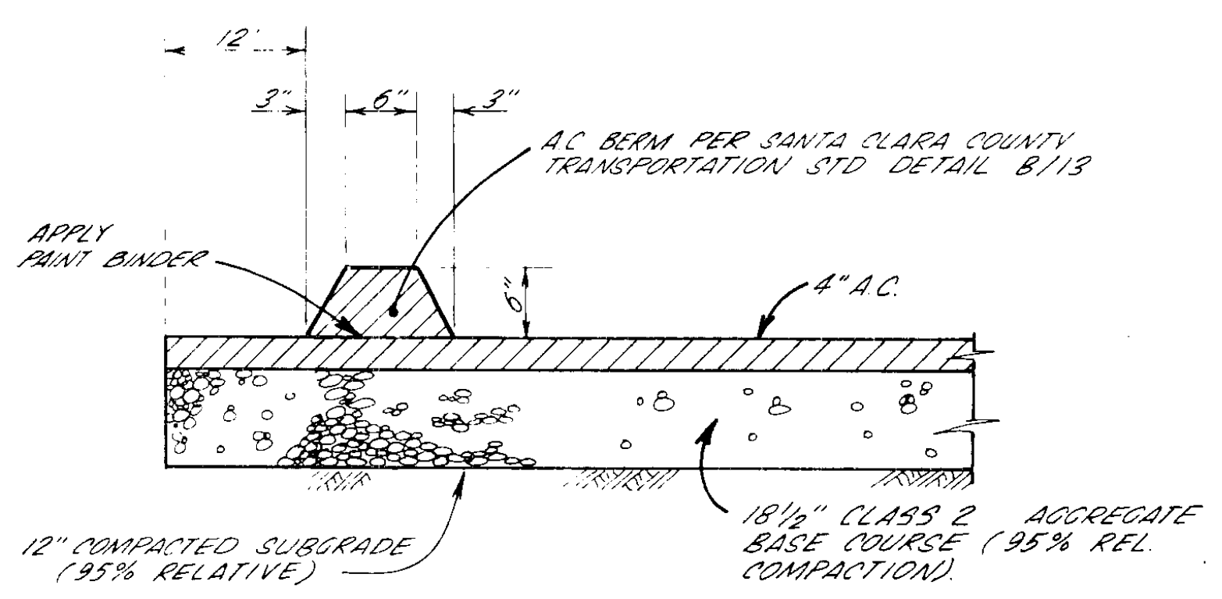
ENVIRONMENTAL ENHANCEMENT THRU ENGINEERING



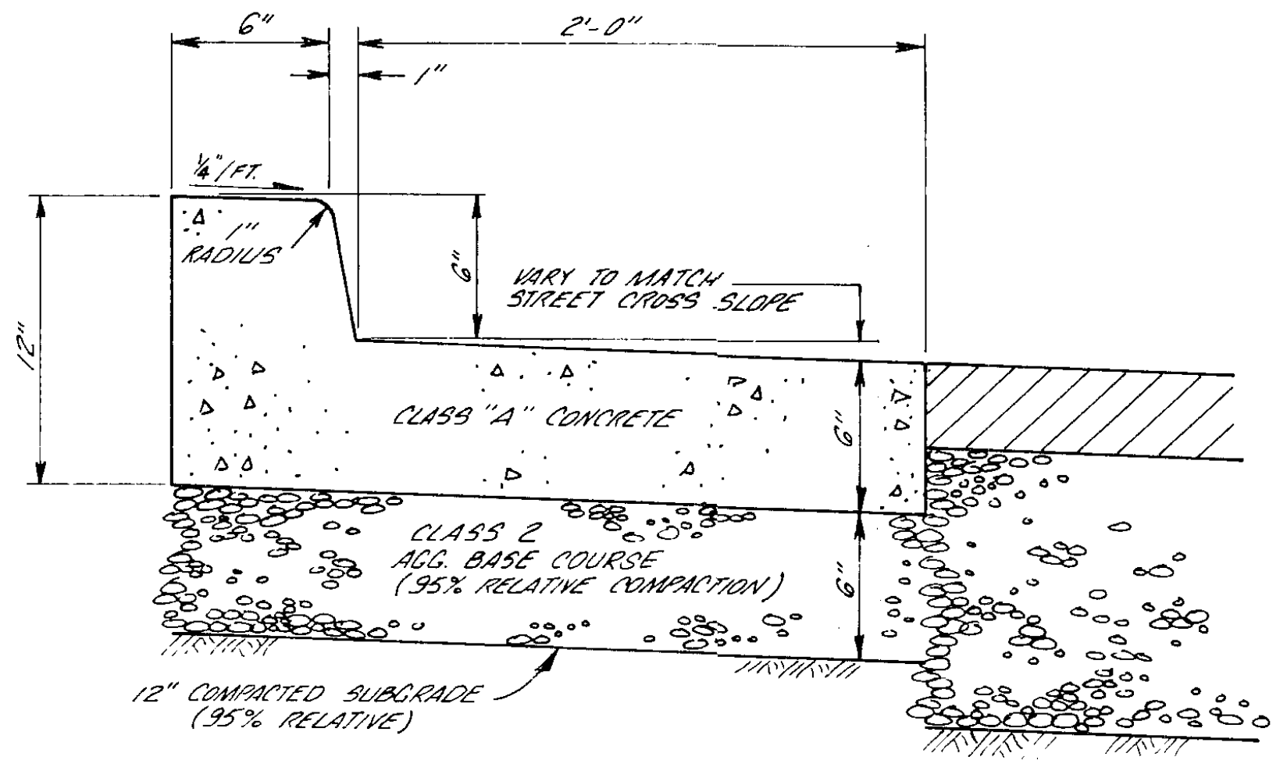
Ⓖ 17|27 MAINTENANCE ROAD/DRIVEWAY N.T.S



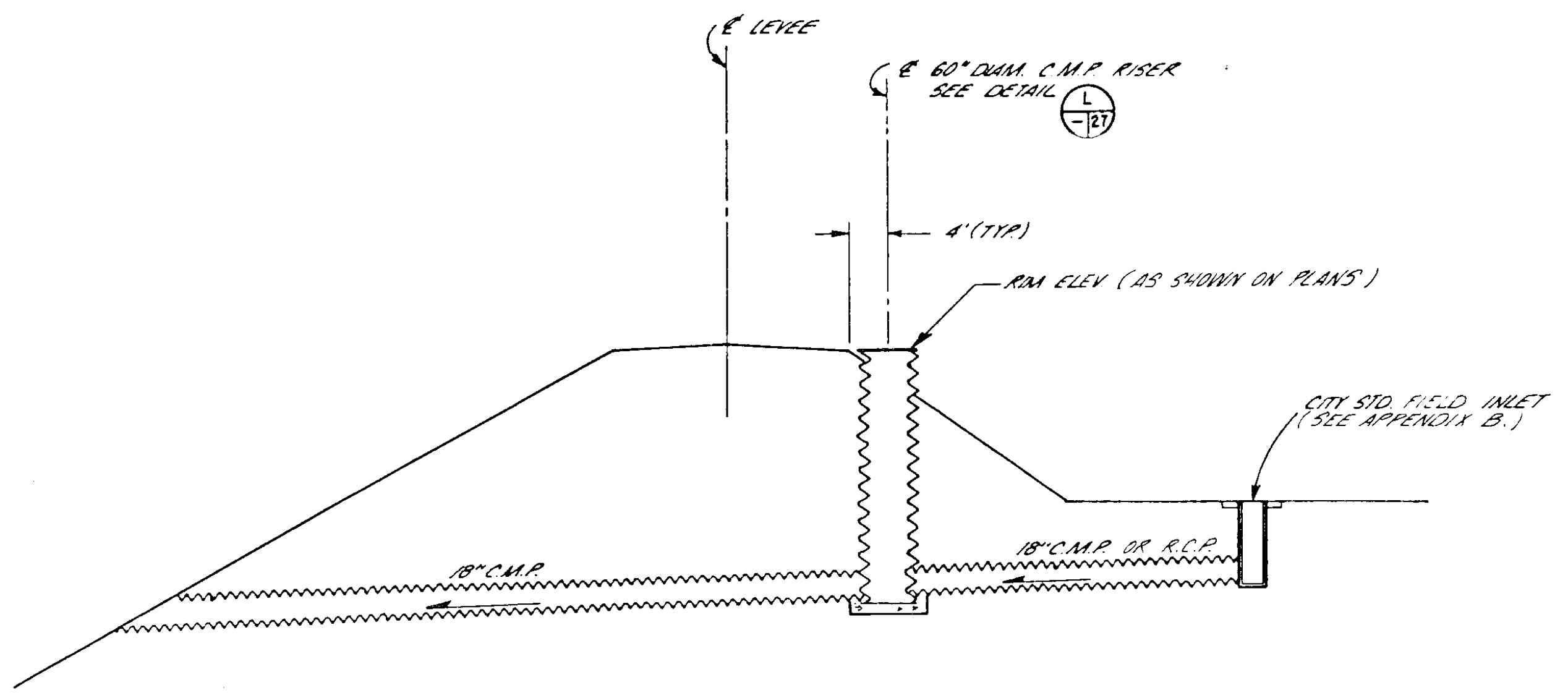
Ⓗ 17|27 CONCRETE "V" DITCH N.T.S.


12"
3"
6"
3"
A.C. BERM PER SANTA CLARA COUNTY TRANSPORTATION STD DETAIL B/13
APPLY PAINT BINDER
6"
4" A.C.
12" COMPACTED SUBGRADE (95% RELATIVE)
18½" CLASS 2 AGGREGATE BASE COURSE (95% REL. COMPACTION).

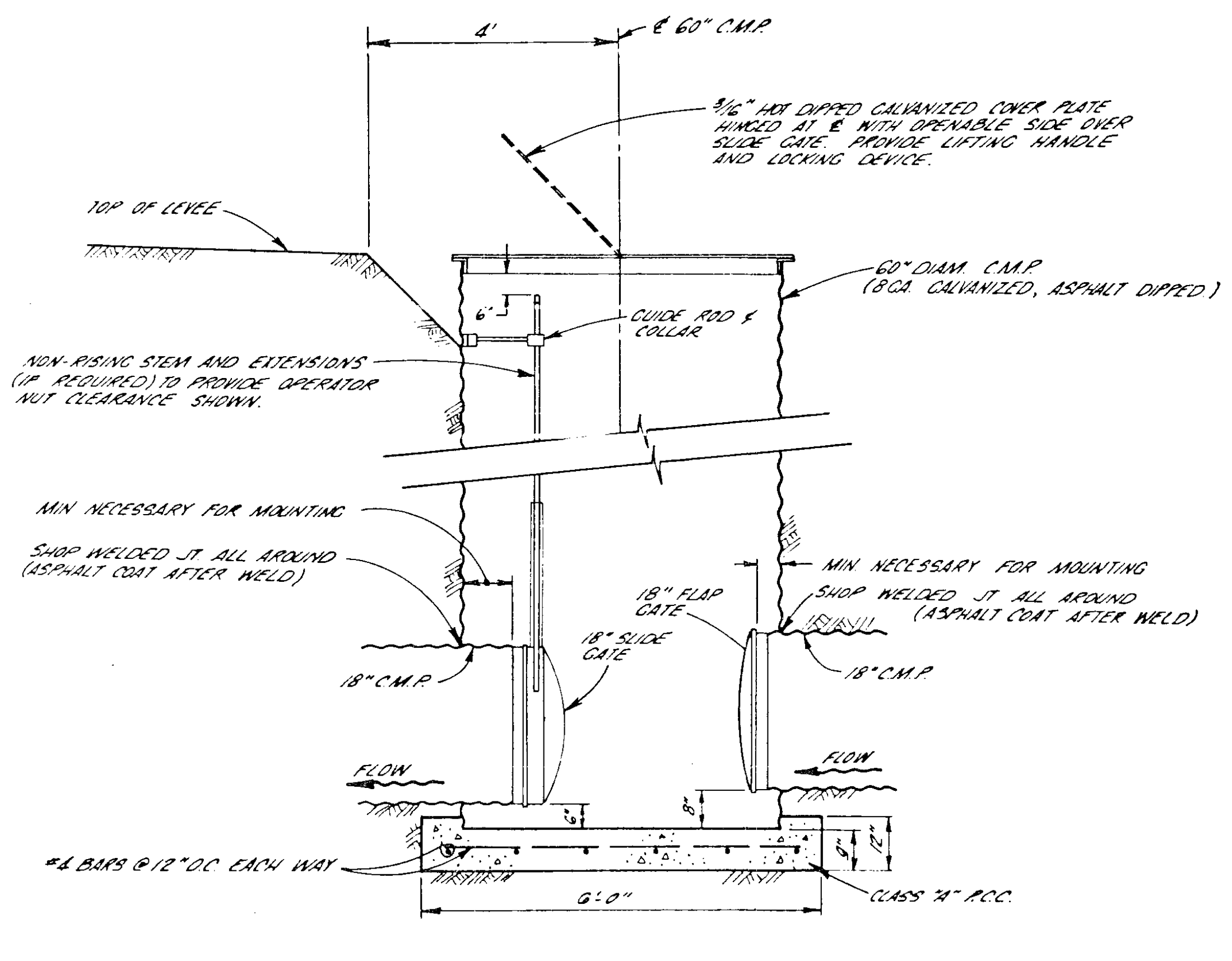
Ⓘ -|27 A. C. BERM N.T.S.


6"
2'-0"
1"
¼"/FT.
1" RADIUS
6"
VARY TO MATCH STREET CROSS SLOPE
12"
CLASS "A" CONCRETE
6"
CLASS 2 AGG. BASE COURSE (95% RELATIVE COMPACTION)
6"
12" COMPACTED SUBGRADE (95% RELATIVE)

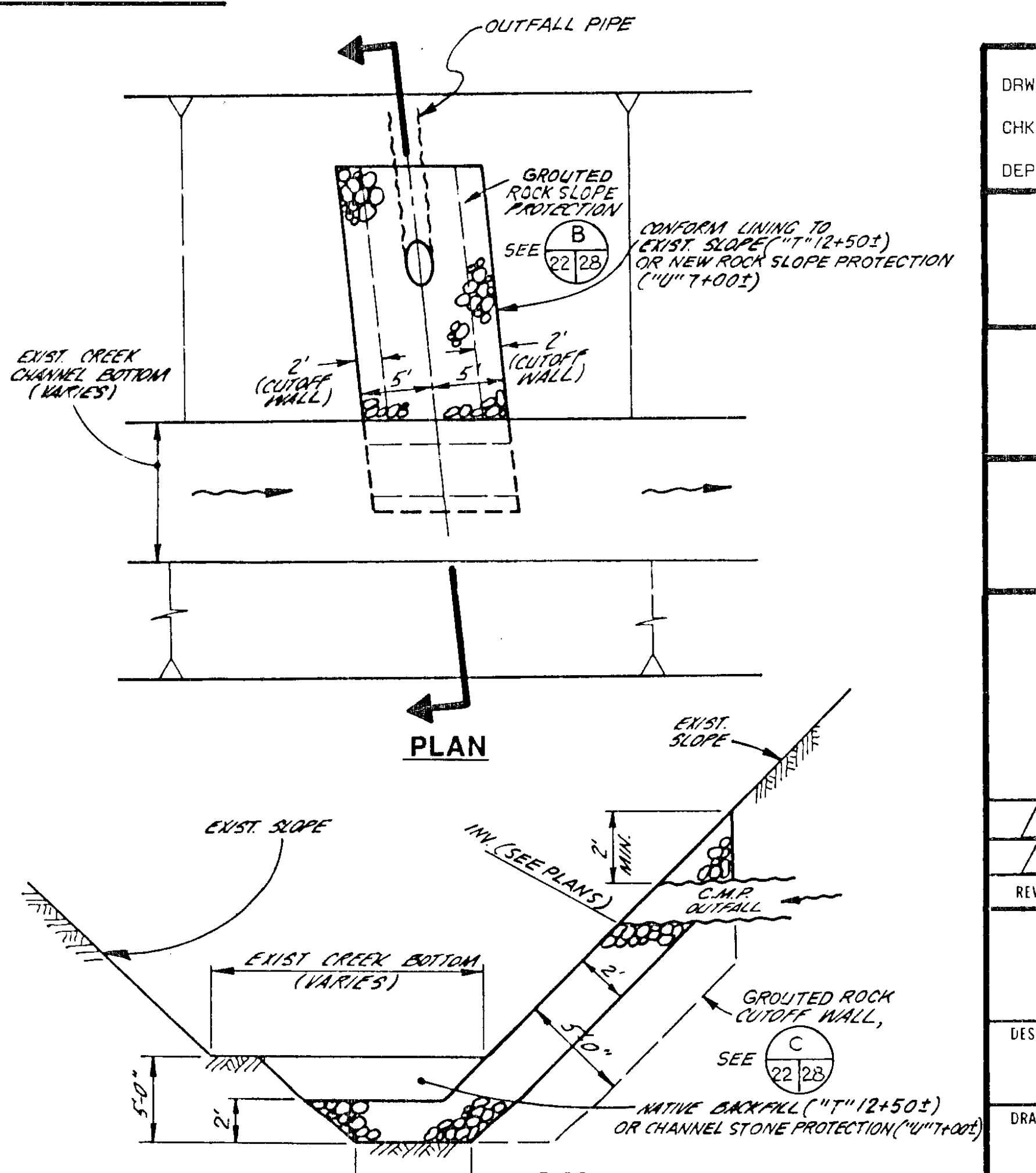
Ⓙ -|27 REVERSE PAN CURB AND GUTTER N.T.S.


℄ LEVEE
℄ 60" DIAM. C.M.P. RISER SEE DETAIL L -|27
4' (TYP.)
RIM ELEV (AS SHOWN ON PLANS)
CITY STD. FIELD INLET (SEE APPENDIX B.)
18" C.M.P. OR R.C.P.
18" C.M.P.

Ⓚ -|27 TYPICAL STORM OUTFALL N.T.S.


4'
℄ 60" C.M.P.
3/16" HOT DIPPED GALVANIZED COVER PLATE HINGED AT ℄ WITH OPENABLE SIDE OVER SLIDE GATE. PROVIDE LIFTING HANDLE AND LOCKING DEVICE.
TOP OF LEVEE
60" DIAM. C.M.P. (8 GA. GALVANIZED, ASPHALT DIPPED)
6'
GUIDE ROD & COLLAR
NON-RISING STEM AND EXTENSIONS (IF REQUIRED) TO PROVIDE OPERATOR NUT CLEARANCE SHOWN.
MIN NECESSARY FOR MOUNTING
SHOP WELDED JT. ALL AROUND (ASPHALT COAT AFTER WELD)
MIN NECESSARY FOR MOUNTING
SHOP WELDED JT. ALL AROUND (ASPHALT COAT AFTER WELD)
18" FLAP GATE
18" SLIDE GATE
18" C.M.P.
18" C.M.P.
FLOW
FLOW
6"
8"
9"
12"
#4 BARS @ 12" O.C. EACH WAY
6'-0"
CLASS "A" P.C.C.

Ⓛ 14|27 TYPICAL OUTFALL RISER N.T.S


OUTFALL PIPE
GROUTED ROCK SLOPE PROTECTION
SEE B 22|28
CONFORM LINING TO EXIST. SLOPE ("T" 12+50±) OR NEW ROCK SLOPE PROTECTION ("U" 7+00±)
EXIST. CREEK CHANNEL BOTTOM (VARIES)
2' (CUTOFF WALL)
5'
5'
2' (CUTOFF WALL)
PLAN
EXIST. SLOPE
EXIST. SLOPE
INV. (SEE PLANS)
2' MIN.
C.M.P. OUTFALL
EXIST. CREEK BOTTOM (VARIES)
2'
5'-0"
GROUTED ROCK CUTOFF WALL, SEE C 22|28
5'-0"
2'
NATIVE BACKFILL ("T" 12+50±) OR CHANNEL STONE PROTECTION ("U" 7+00±)
SECTION
5'-0"

Ⓜ 15|27 STORM OUTFALL SPILL PAD N.T.S.
(TYPICAL)

DRWN.: T.L., J.D.
CHKD.: SDL, DVR
DEPT.: CIVIL

R+G RUTH AND GOING, INC.
Civil Engineering Land Surveying
2180 LUNDY AVE. SAN JOSE, CA. 95131 (408) 943-1840

JOB. # 17273-130

Robert A. Smith
ROBERT A. SMITH RCE 20821 EXP. 9-30-89
DATE: 5-24-88

Santa Clara Valley Water District

ACCEPTED BY DISTRICT: DATE 5/24/88

PROJECT ENGINEER R.C.E. NO. 25413
Bruce Wilson
DIVISION ENGINEER R.C.E. NO. 15821

REVISION	DATE	DESCRIPTION	BY	BY
△				
△				

DESIGNED
DRAWN
CHECKED

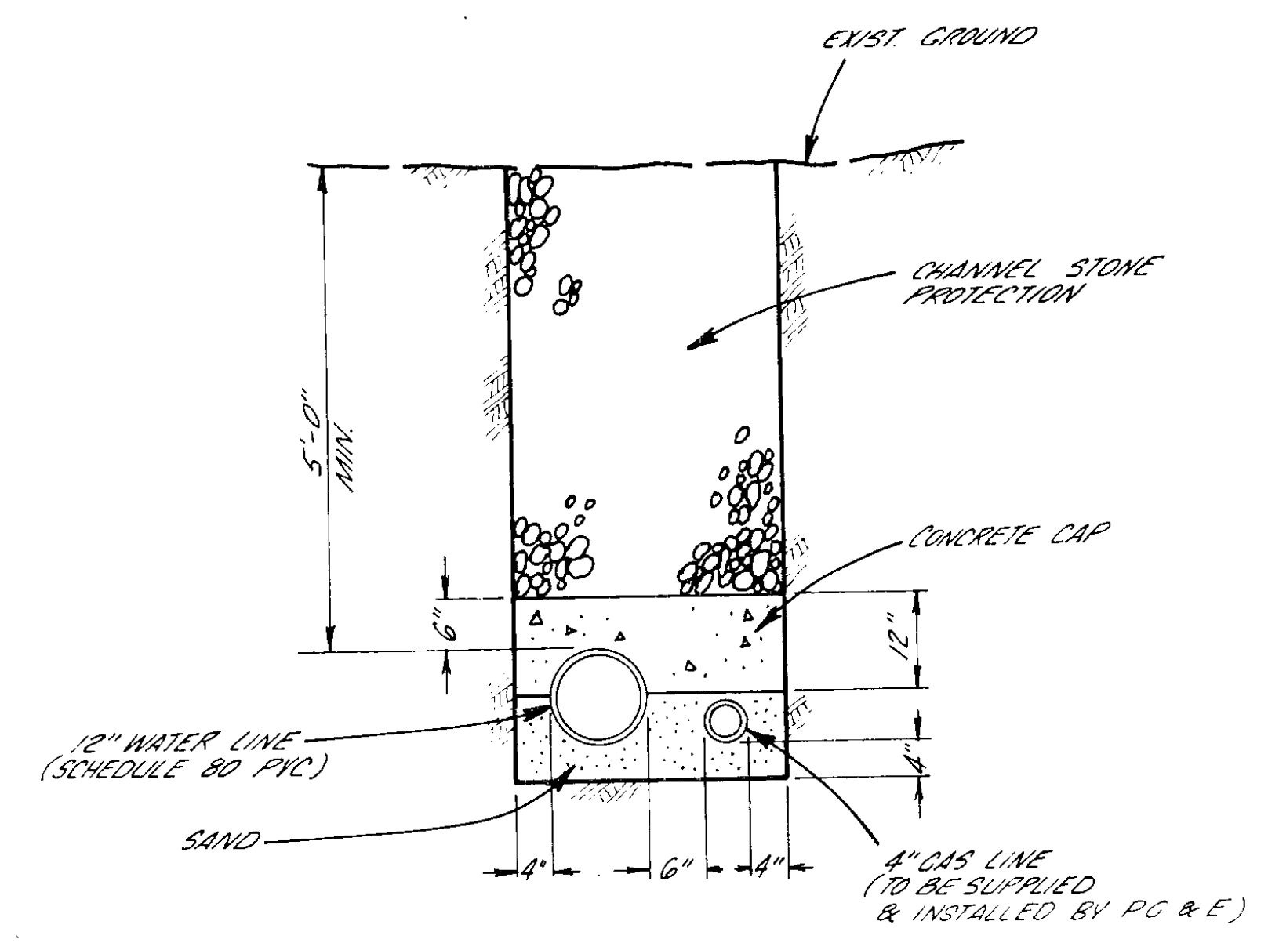
THOMAS ROAD AT UVAS CREEK
DETAILS

SUBMITTED
DATE APPROVED
SCALE AS SHOWN
SPEC. No.
SHEET 27
FILE No.

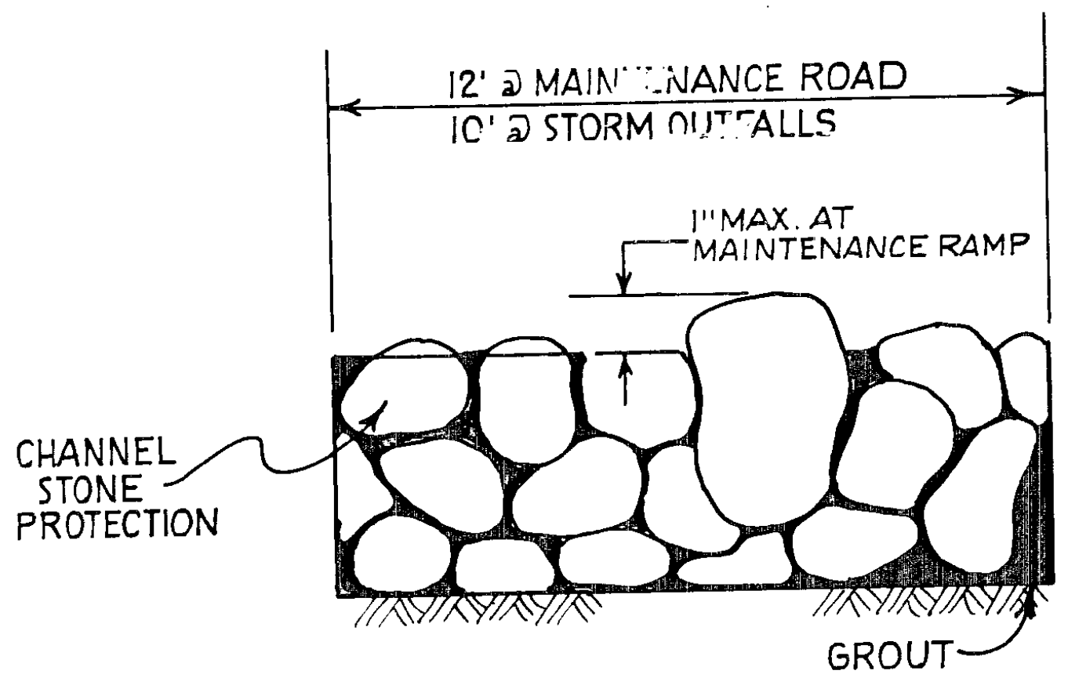
SANTA CLARA_CA Work Maps
SANTA CLARA_CA0257

AERO-GEODETIC CORPORATION
CONSULTING PHOTOGRAMMETRIC ENGINEERS
1600 WARBURTON AVENUE SANTA CLARA CALIFORNIA 95050

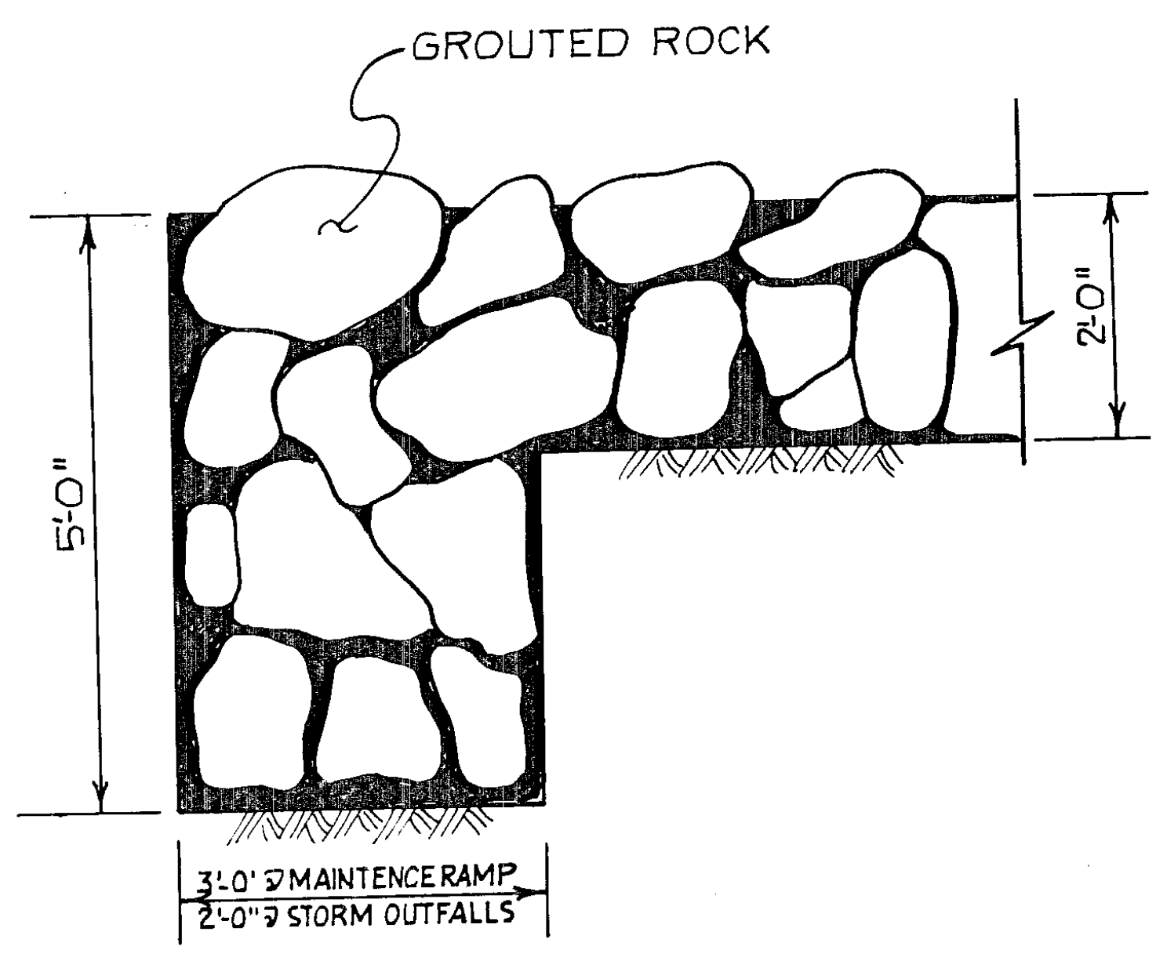
FUNCTION ANALYSIS - VE PAYS


EXIST. GROUND
CHANNEL STONE PROTECTION
5'-0" MIN.
CONCRETE CAP
6"
12"
4"
12" WATER LINE (SCHEDULE 80 PVC)
SAND
4" 6" 4"
4" GAS LINE (TO BE SUPPLIED & INSTALLED BY PG & E)

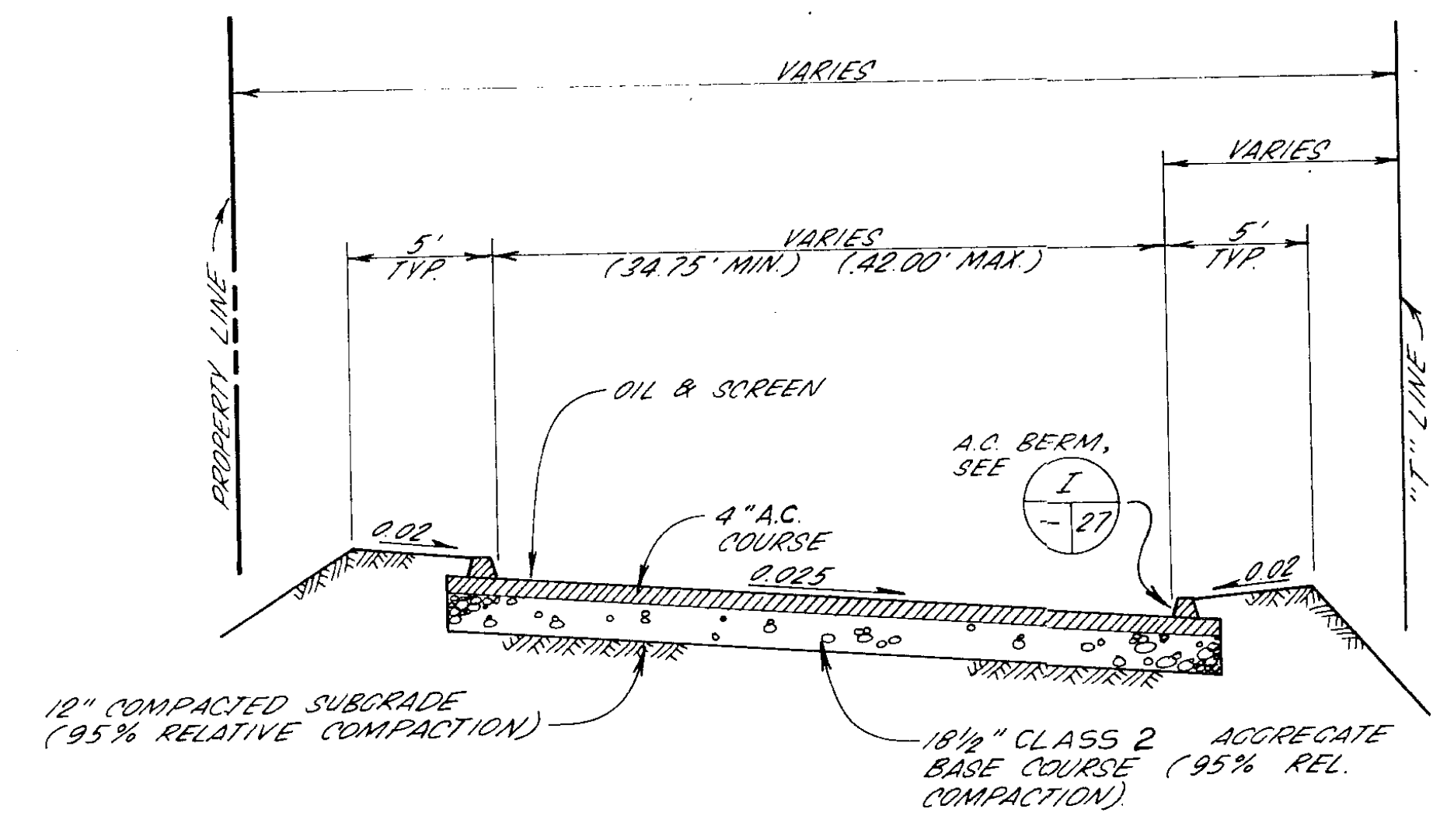
A 14|28 **TEMPORARY UTILITY TRENCH DETAIL**
N.T.S.



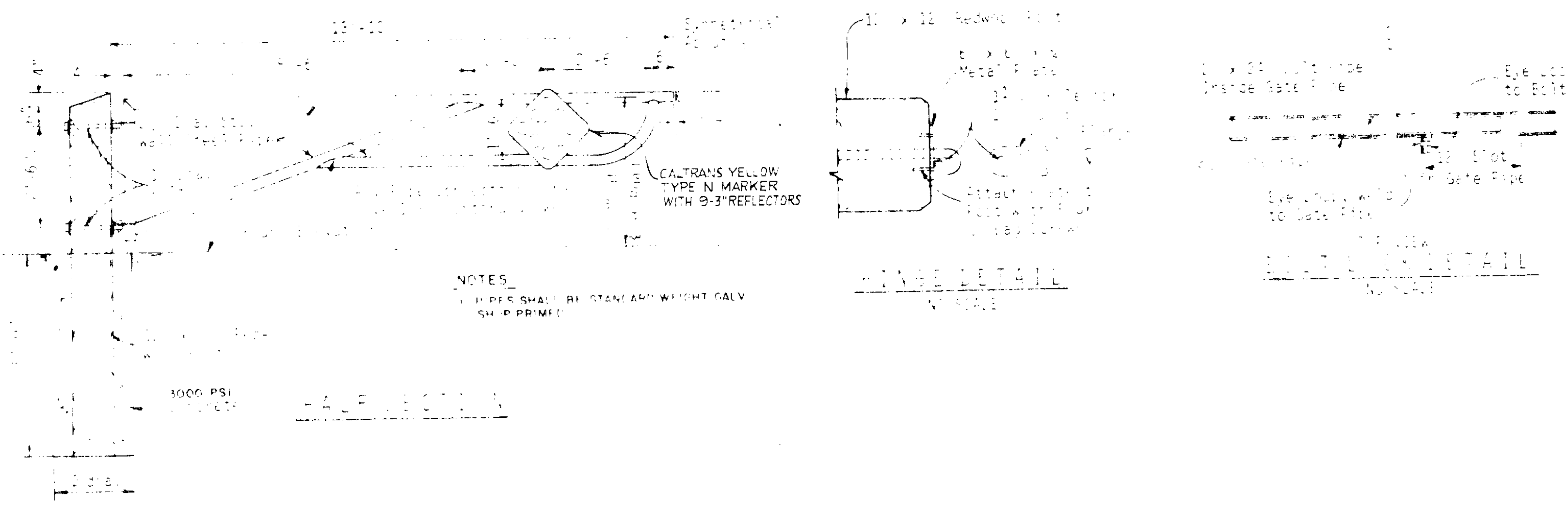
B 22|28 **GROUTED ROCK DETAIL**
N.T.S.



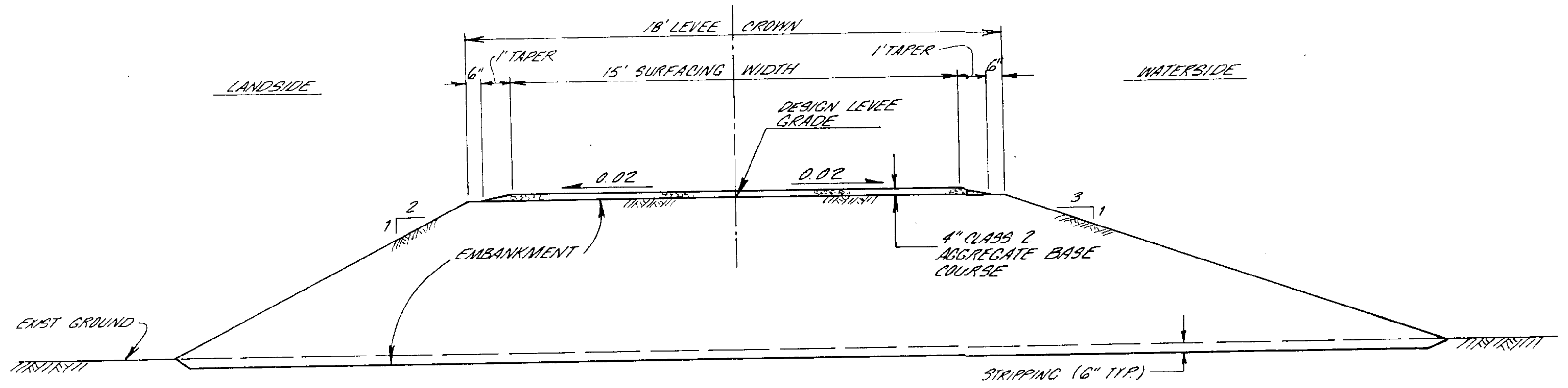
C 22|28 **GROUTED ROCK CUTOFF WALL DETAIL**
N.T.S.


VARIES
VARIES
5' TYP.
VARIES (34.75' MIN.) (42.00' MAX.)
5' TYP.
PROPERTY LINE
"T" LINE
OIL & SCREEN
A.C. BERM, SEE I --|27
4" A.C. COURSE
0.02
0.025
0.02
12" COMPACTED SUBGRADE (95% RELATIVE COMPACTION)
18½" CLASS 2 AGGREGATE BASE COURSE (95% REL. COMPACTION)

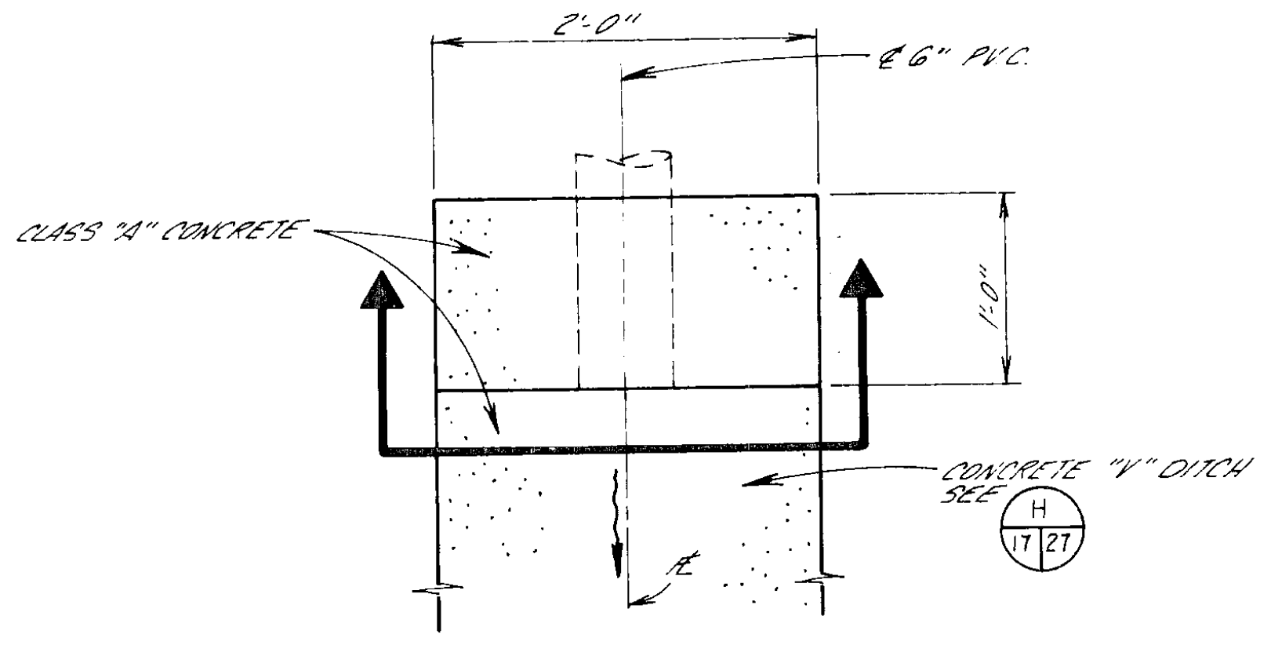
D 17|28 **THOMAS ROAD**
N.T.S.


CALTRANS YELLOW TYPE N MARKER WITH 9-3" REFLECTORS
NOTES
1. PIPES SHALL BE STANDARD WEIGHT GALV. SHOP PRIMED
3000 PSI

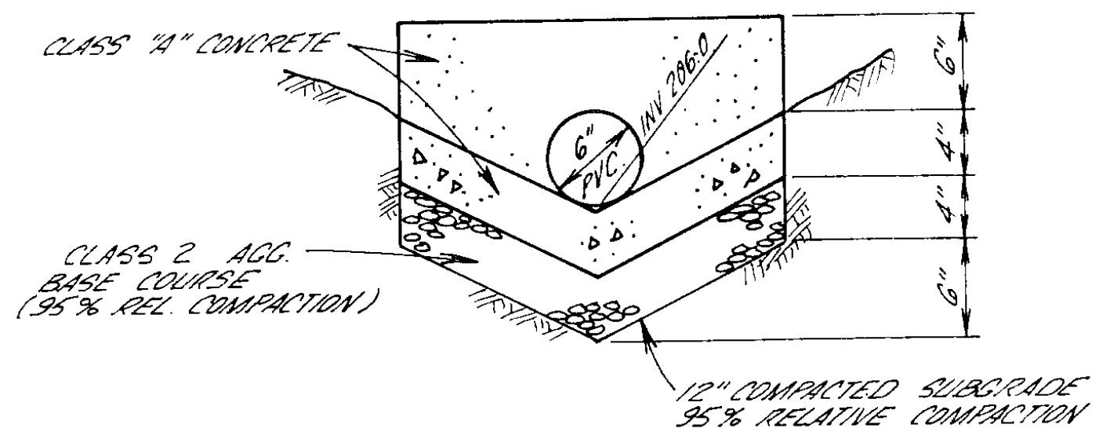
L 27|28 **MAINTENANCE ROAD/DRIVEWAY GATE DETAILS**
N.T.S.



K 15|28 **TYPICAL LEVEE SECTION** N.T.S.
STA. 15+94.10 TO 19+30±

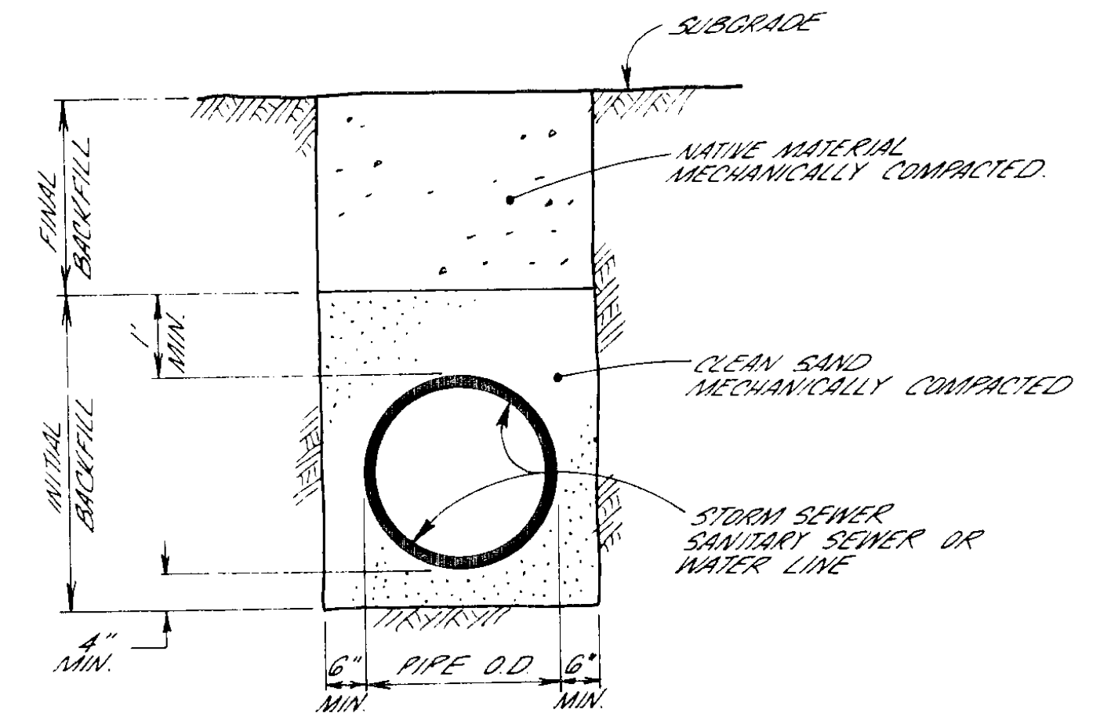


PLAN

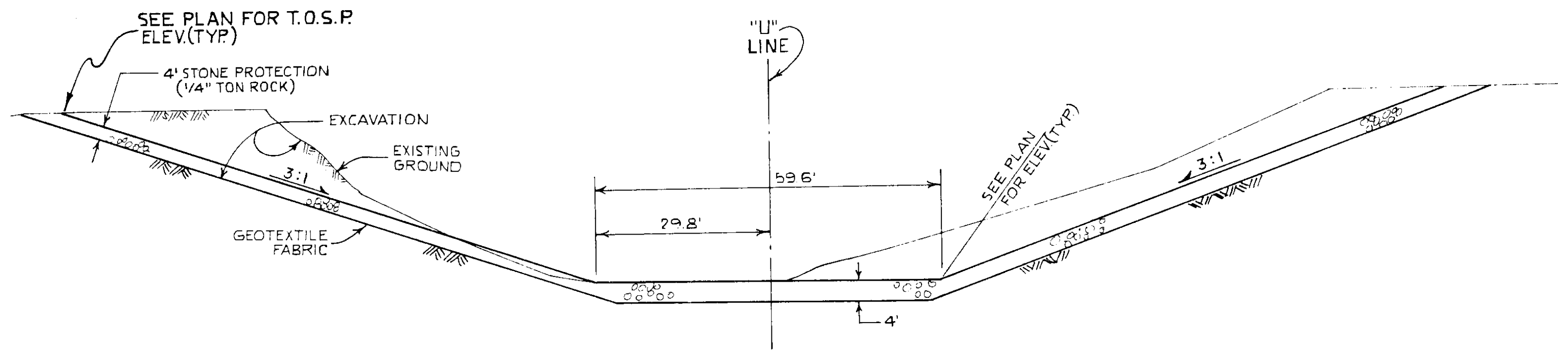

CLASS "A" CONCRETE
6" PVC.
INV 206.0
CLASS 2 AGG. BASE COURSE (95% REL. COMPACTION)
12" COMPACTED SUBGRADE 95% RELATIVE COMPACTION
6"
4"
4"
6"

SECTION

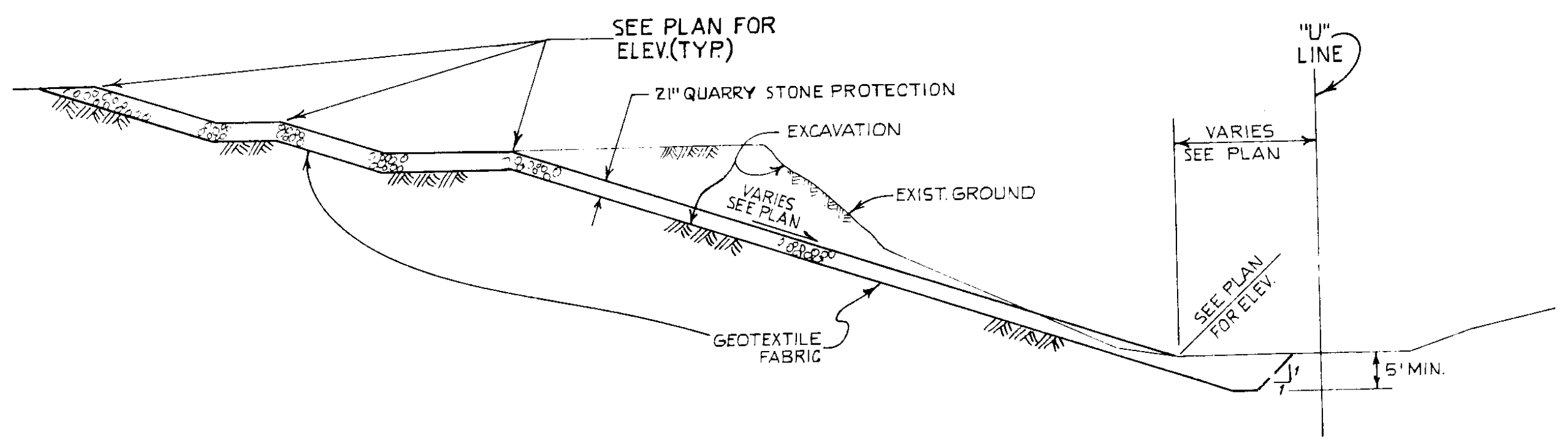
E 17|28 **"V" DITCH OUTFALL STRUCTURE**
N.T.S.


SUBGRADE
NATIVE MATERIAL MECHANICALLY COMPACTED.
FINAL BACKFILL
1' MIN.
INITIAL BACKFILL
CLEAN SAND MECHANICALLY COMPACTED
STORM SEWER SANITARY SEWER OR WATER LINE
4" MIN.
6" MIN.
PIPE O.D.
6" MIN.

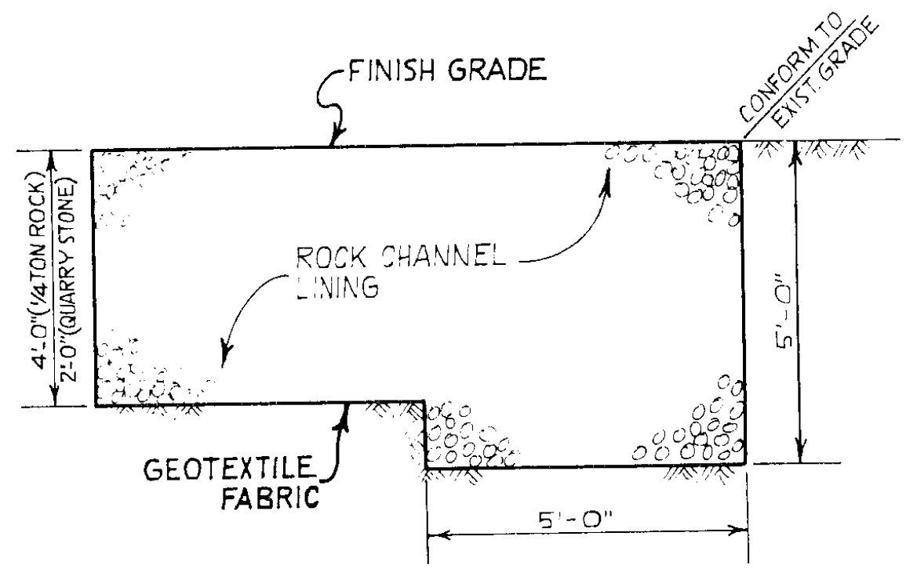
F –|28 **TYPICAL TRENCH BACKFILL**
N.T.S.



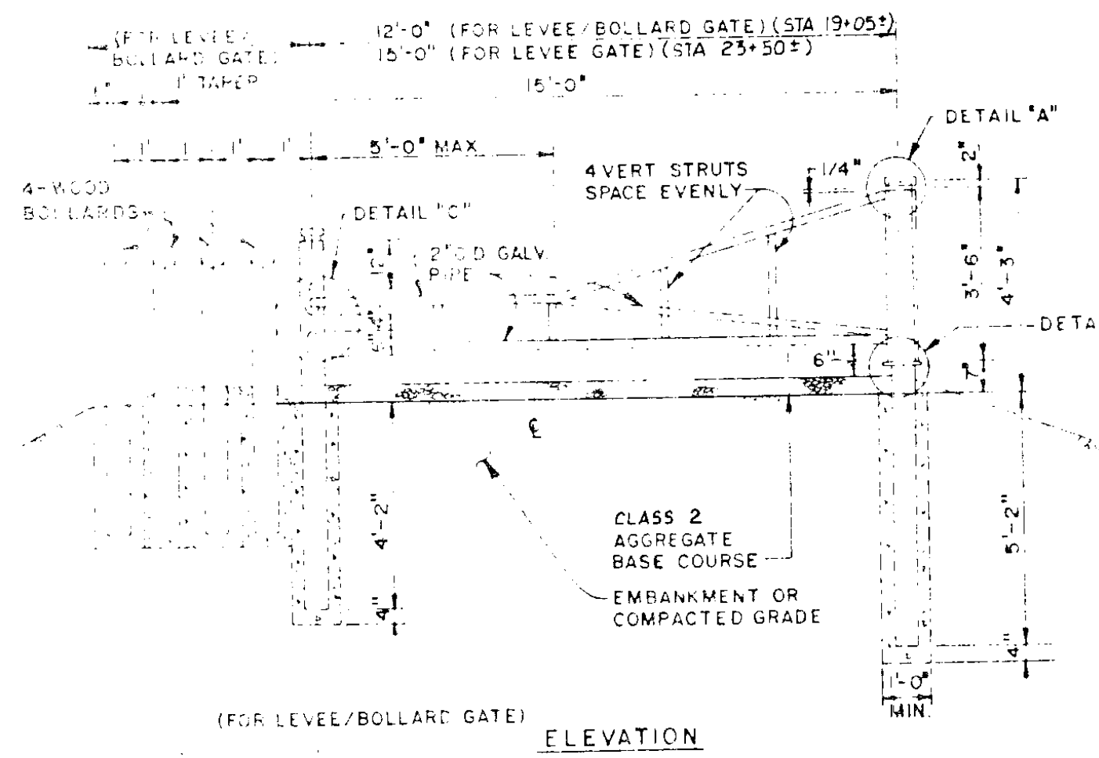
I 22|28 **SECTION**
N.T.S.



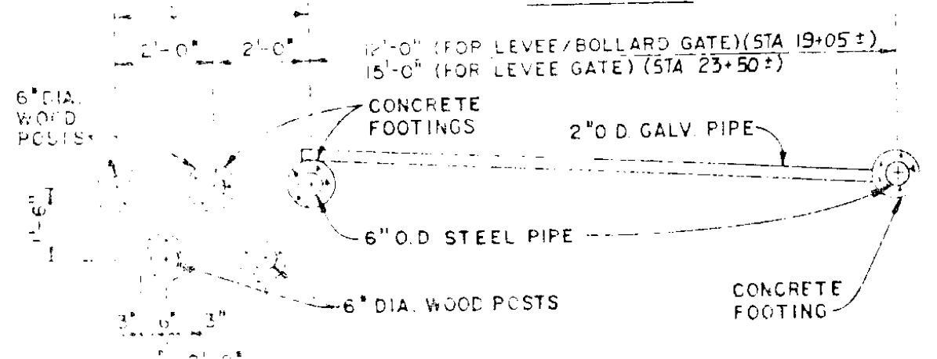
H 22|28 **SECTION**(TYPICAL)
N.T.S.



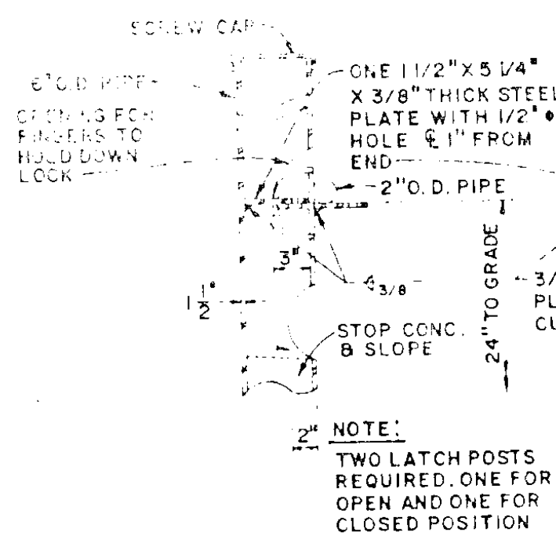
G 22|28 **STONE PROTECTION CUTOFF WALL**
N.T.S.


(FOR LEVEE/BOLLARD GATE)
12'-0" (FOR LEVEE/BOLLARD GATE) (STA 19+05±)
15'-0" (FOR LEVEE GATE) (STA 23+50±)
1' TAPER
15'-0"
5'-0" MAX.
4-WOOD BOLLARDS
DETAIL "C"
2" O.D. GALV. PIPE
4 VERT STRUTS SPACE EVENLY
1/4"
DETAIL "A"
3'-6"
4'-3"
DETAIL "B"
6"
℄
CLASS 2 AGGREGATE BASE COURSE
EMBANKMENT OR COMPACTED GRADE
4'-2"
5'-2"
1'-0" MIN.

(FOR LEVEE/BOLLARD GATE) ELEVATION

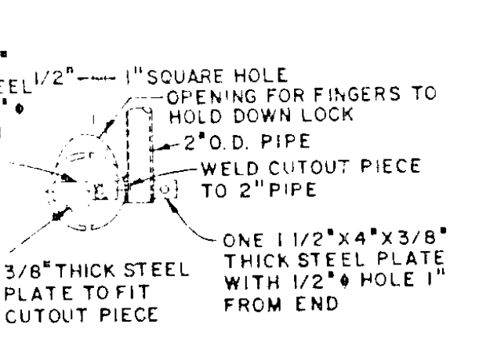


PLAN


SCREW CAP
6" O.D. PIPE
OPENING FOR FINGERS TO HOLD DOWN LOCK
ONE 1 1/2" X 5 1/4" X 3/8" THICK STEEL PLATE WITH 1/2" Ø HOLE ℄ 1" FROM END
2" O.D. PIPE
3"
3/8
1 1/2"
STOP CONC. & SLOPE
2"

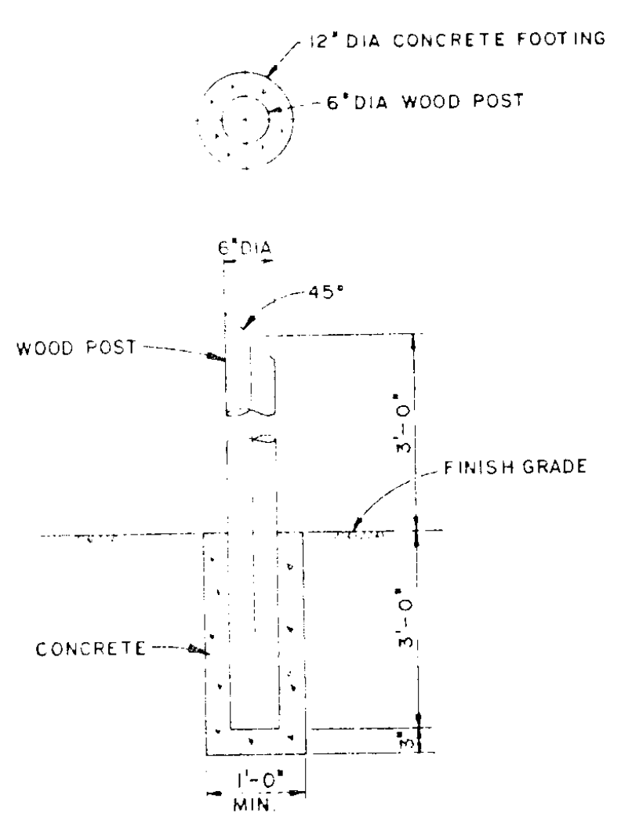
NOTE:
TWO LATCH POSTS REQUIRED. ONE FOR OPEN AND ONE FOR CLOSED POSITION

GATE LATCH DETAIL

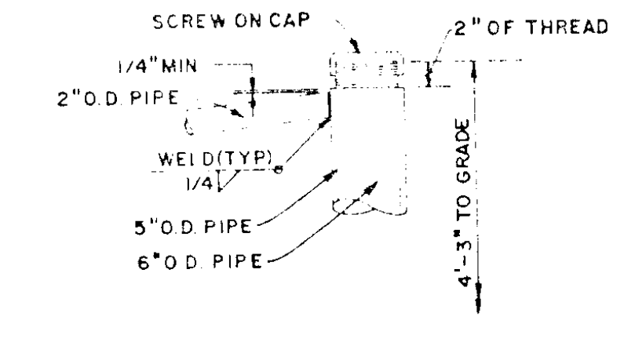

1/2"
1" SQUARE HOLE OPENING FOR FINGERS TO HOLD DOWN LOCK
2" O.D. PIPE
WELD CUTOUT PIECE TO 2" PIPE
3/8" THICK STEEL PLATE TO FIT CUTOUT PIECE
ONE 1 1/2" X 4" X 3/8" THICK STEEL PLATE WITH 1/2" Ø HOLE 1" FROM END
24" TO GRADE

PLAN

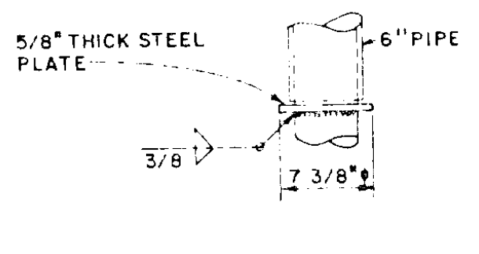
NOTES:
1. PIPES SHALL BE STANDARD WEIGHT GALV. SHOP PRIMED.
2. FILL ALL STEEL PIPE POSTS WITH CONCRETE.
3. PATCH ALL BASE COURSE AS REQUIRED.
4. TYP. WELD: 1/4" FILLET WELD UNLESS OTHERWISE NOTED.
5. GRIND ALL EDGES SMOOTH AT CUTOUTS IN PIPE AND AT STEEL PLATES.
6. FOOTING CONCRETE SHALL HAVE A STRENGTH OF 3000 PSI.



BOLLARD DETAIL
(FOR LEVEE/BOLLARD GATE)



CAP SLEEVE HINGE DETAIL



BASE SLEEVE HINGE DETAIL

J 17|28 **LEVEE/BOLLARD GATE AND LEVEE GATE DETAILS**
N.T.S.

DRWN.: T.L., MVO
CHKD.: SDL, DVR
DEPT.: CIVIL
R+G RUTH AND GOING, INC.
Civil Engineering
2160 Lundy Ave. San Jose, CA 95131-1832 (408) 943-1640
JOB.# 17273-130

Robert A. Smith
ROBERT A. SMITH RCE 20821 EXP. 9-30-89
5-24-88
DATE:

Santa Clara Valley Water District

ACCEPTED BY DISTRICT: DATE 5/25/88
PROJECT ENGINEER RCE NO 25413
Bruce Wilson
DIVISION ENGINEER RCE NO 15551

REVISION	DATE	DESCRIPTION	BY	BY
△				
△				

DESIGNED
DRAWN
CHECKED
SUBMITTED
DATE APPROVED

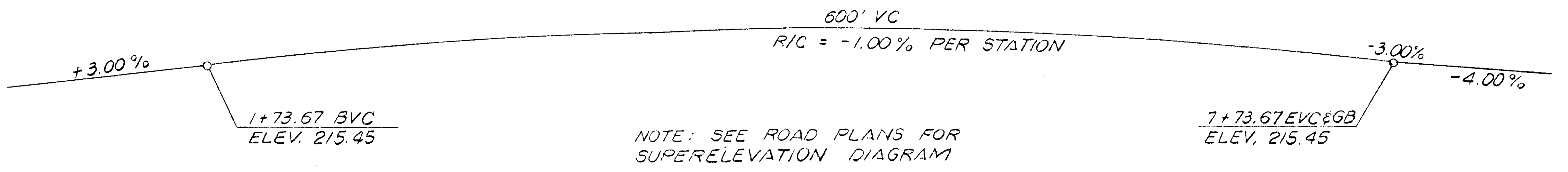
THOMAS ROAD AT UVAS CREEK
DETAILS

SCALE AS SHOWN
SPEC. No.
SHEET 28
FILE No.

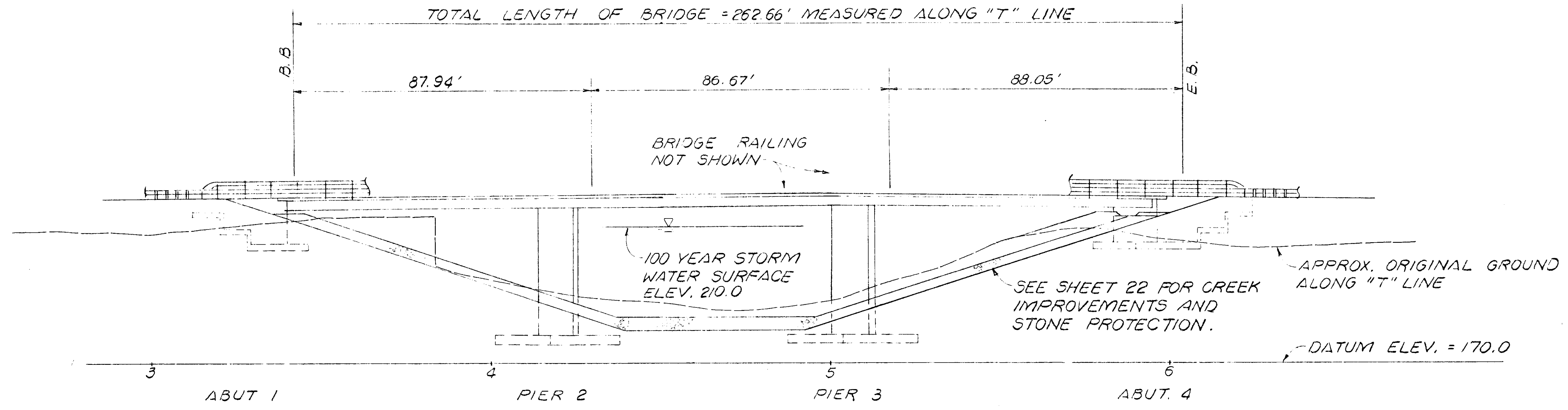
ENVIRONMENTAL ENHANCEMENT THRU ENGINEERING

SAFETY PAYS

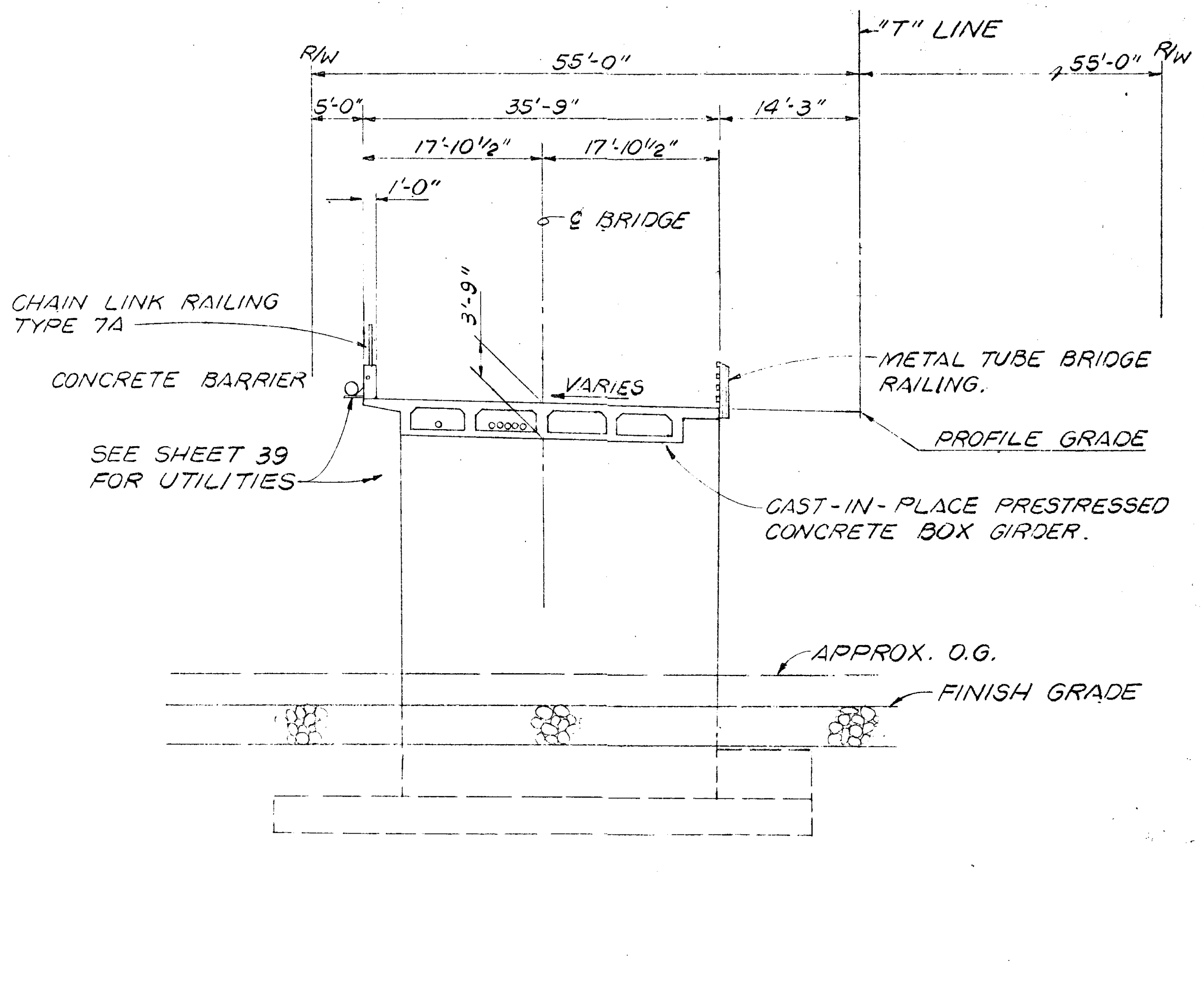
SANTA CLARA_CA Work Maps
SANTA CLARA_CA0258



PROFILE GRADE
NOT TO SCALE


TOTAL LENGTH OF BRIDGE = 262.66' MEASURED ALONG "T" LINE
B.B.
E.B.
87.94'
86.67'
88.05'
BRIDGE RAILING NOT SHOWN
100 YEAR STORM WATER SURFACE ELEV. 210.0
SEE SHEET 22 FOR CREEK IMPROVEMENTS AND STONE PROTECTION.
APPROX. ORIGINAL GROUND ALONG "T" LINE
DATUM ELEV. = 170.0
3
4
5
6
ABUT 1
PIER 2
PIER 3
ABUT. 4

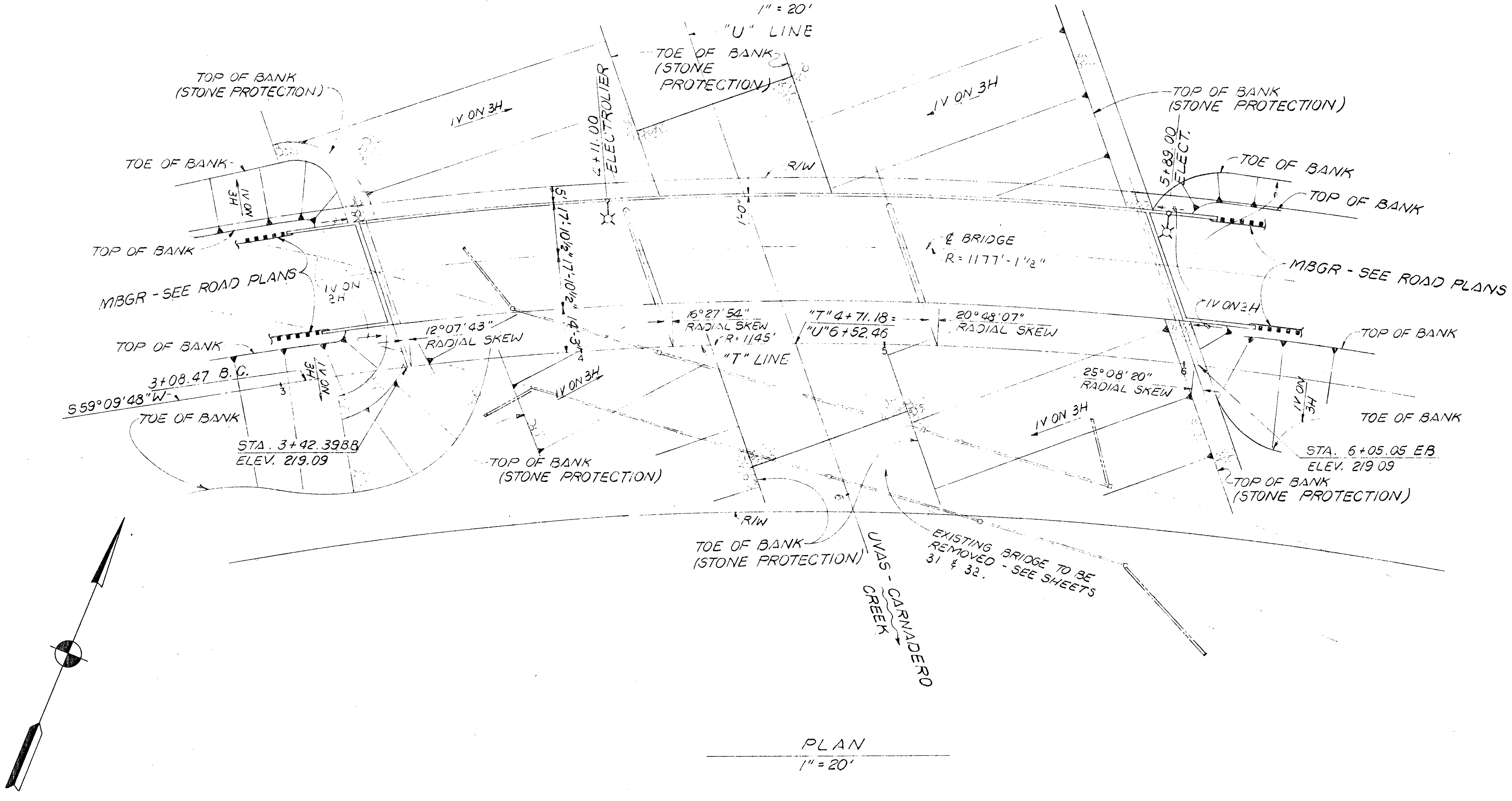
ELEVATION
1" = 20'



TYPICAL SECTION
1" = 10'

NOTES - SEE SHEET 30 FOR INDEX TO STRUCTURE PLANS
SEE SHEET 17 FOR STRIPING & SIGNS.

GRAPHIC SCALE
1" = 10' 0 2 4 6 8 10 20 30
1" = 20' 0 5 10 15 20 40 60



PLAN
1" = 20'

DRWN.: JCO
CHKD.: KWC
DEPT.: STRUCT.

R+G RUTH AND GOING, INC.
Structural Engineering
2160 Lundy Ave San Jose CA 95131-1832 (408) 943-1640

JOB.# 17273

Roger L Redig
ROGER L. REDIG S.E. 1431 EXP. 3-31-89
3-28-88
DATE:

Santa Clara Valley Water District

ACCEPTED BY DISTRICT: DATE 5/25/88

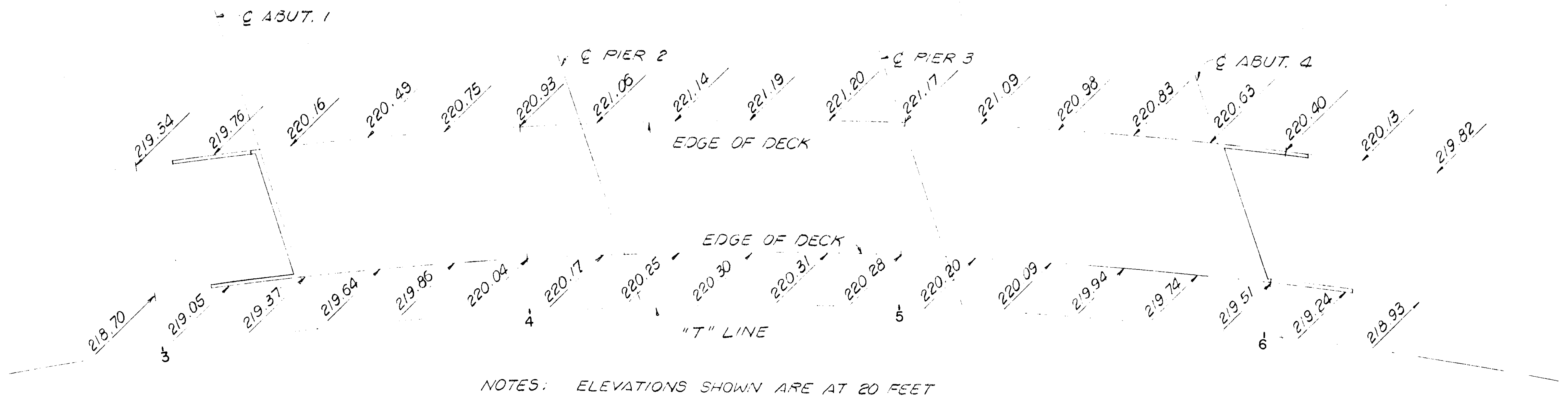
PROJECT ENGINEER R.C.E. NO. 25413
Bruce Wilson
DIVISION ENGINEER R.C.E. NO. 15851

REVISION	DATE	DESCRIPTION	BY	BY
△				
△				

DESIGNED:
DRAWN:
CHECKED:

BRIDGE GENERAL PLAN
THOMAS ROAD AT UVAS CREEK

SUBMITTED:
DATE APPROVED
SCALE AS SHOWN
SPEC. No.
SHEET 29
FILE No.

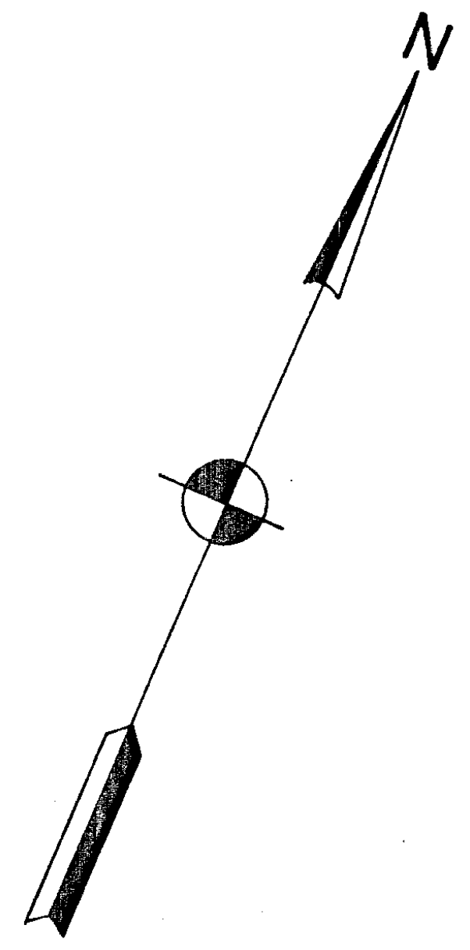


NOTES: ELEVATIONS SHOWN ARE AT 20 FEET INTERVALS MEASURED ALONG "T" LINE

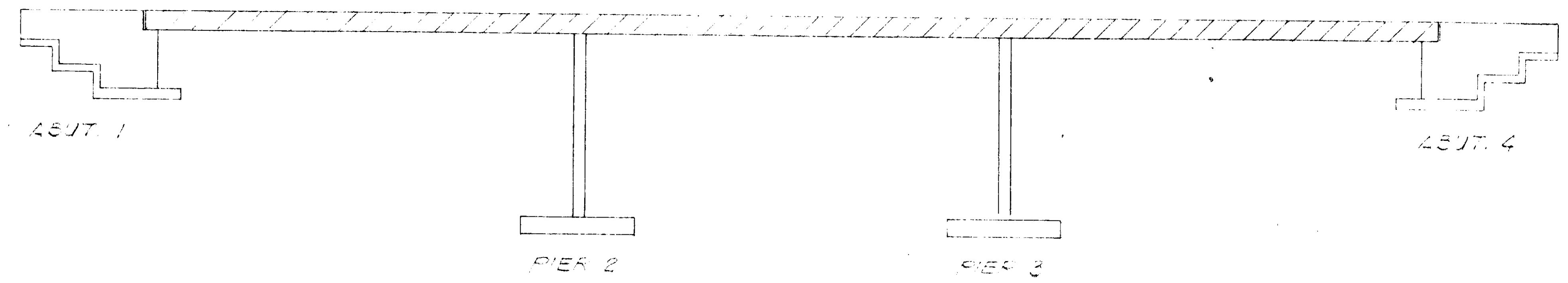
ELEVATIONS DO NOT INCLUDE CAMBER.

DECK ELEVATION PLAN

1" = 20'



ENVIRONMENTAL ENHANCEMENT THRU ENGINEERING



CONCRETE STRENGTH & TYPE LIMITS

NO SCALE

▭ STRUCTURAL CONCRETE - BRIDGE f'c = 3250 p.s.i.
▨ STRUCTURAL CONCRETE - BRIDGE f'c = 4000 p.s.i.

TO BE SUPPLEMENTED BY STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION STANDARD PLANS DATED JANUARY 1988 & ARE INCLUDED IN THE APPENDIX IN THE PROJECT SPECIFICATIONS.

A79-C	GUARD RAIL CONNECTECTIONS TO BRIDGE RAILS, RETAINING WALLS AND ABUTMENTS.
B0-1	BRIDGE DETAILS
B0-3	BRIDGE DETAILS
B0-5	BRIDGE DETAILS
B0-13	BRIDGE DETAILS
B3-8	RETAINING WALL DETAILS NO. 1
B3-9	RETAINING WALL DETAILS NO 2
B6-21	JOINT SEALS
B7-1	BOX GIRDER DETAILS
B7-10	UTILITY OPENINGS - BOX GIRDER
B8-5	CAST-IN-PLACE PRESTRESSED GIRDER DETAILS.
B11-52	CHAIN LINK RAILING TYPE 7
B14-4	SUPPLY LINE
ES-7A	SIGNAL AND LIGHTING DETAILS, ELECTRICAL DETAILS STRUCTURE INSTALLATIONS.
ES-7B	SIGNAL AND LIGHTING DETAILS, ELECTRICAL DETAILS STRUCTURE INSTALLATIONS.
ES-7C	SIGNAL AND LIGHTING DETAILS, ELECTRICAL DETAILS STRUCTURE INSTALLATIONS.
ES-7D	SIGNAL AND LIGHTING DETAILS, ELECTRICAL DETAILS STRUCTURE INSTALLATIONS.

GENERAL NOTES
LOAD FACTOR DESIGN

DESIGN: BRIDGE DESIGN SPECIFICATIONS (1983 AASHTO WITH CALTRANS SUPPLEMENTS)

DEAD LOAD: INCLUDES 35 PSF FOR FUTURE WEARING SURFACE.

LIVE LOADING: HS 20-44

REINFORCED CONCRETE:
f_y = 60,000 PSI
f'_c = 3,250 PSI
n = 9
TRANSVERSE DECK SLABS (WORKING STRESS DESIGN)
f_s = 20,000 PSI
f_c = 1,200 PSI
n = 10

PRESTRESSED CONCRETE: SEE "PRESTRESSING NOTES" ON GIRDER LAYOUT SHEET.

SOIL BEARING PRESSURES:
PER WOODWARD CLYDE CONSULTANTS
DEAD LOAD ONLY = 3000 PSF NET
DEAD + LIVE LOAD = 4000 PSF NET
ULTIMATE = 9000 PSF NET

LEGEND

SECTION OR DETAIL IDENTIFICATION NUMBER
NUMBER OF SHEET ON WHICH SECTION OR DETAIL IS DRAWN.
NUMBER OF SHEET ON WHICH SECTION OR DETAIL IS TAKEN

CALTRANS STANDARD PLAN SHEET NUMBER
DETAIL NUMBER

INDEX TO BRIDGE PLANS

29	BRIDGE GENERAL PLAN
30	DECK ELEVATIONS AND GENERAL NOTES
31	FOUNDATION PLAN
32	BRIDGE REMOVAL
33	EARTHWORK DETAILS
34	ABUTMENT 1
35	ABUTMENT 4
36	ABUTMENT AND WINGWALL DETAILS
37	SHEAR KEY AND DECK DETAILS
38	PIER DETAILS
39	TYPICAL SECTION
40	GIRDER LAYOUT
41	CONCRETE BARRIER
42	METAL TUBE BRIDGE RAILING

ABBREVIATIONS

ABUTMENT	ABUT.
APPROXIMATE	APPROX.
ASPHALT CONCRETE	A.C.
AT	@
BEGINNING OF BRIDGE	B.B.
BEGIN VERTICAL CURVE	B.V.C.
BENCH MARK	BM
BOTTOM	BOT.
CAST-IN-PLACE	CIP
CENTERLINE	℄
CENTER OF GRAVITY	CG
CLEAR	CLR.
CONCRETE	CONC.
CONSTRUCTION	CONST.
CONTINUOUS	CONT.
CUBIC YARD	C.Y.
DIAMETER	DIA., Ø
DIAPHRAGM	DIAPH.
EACH	EA.
ELEVATION	ELEV.
END OF BRIDGE	E.B.
END OF VERTICAL CURVE	EVC
EXISTING	EXIST.
EXPANSION	EXP.
GALVANIZED	GALV.
GAUGE	GA.
HORIZONTAL	HORIZ.
JOINT	JT.
LAYOUT LINE	LOL
LUMP SUM	LS
MAINTENANCE	MAINT.
MAXIMUM	MAX.
MINIMUM	MIN.
MODIFIED	MOD
ORIGINAL GROUND	O.G.
PLATE	℘
POINT OF REVERSE VERTICAL CURVE	PRVC
POUNDS	LBS
POUNDS PER SQUARE FOOT	PSF
POUNDS PER SQUARE INCH	PSI
PRESTRESSED	P/S
RADIUS	R
RATE OF CHANGE	R/C
REINFORCED, REINFORCING	REINF.
RETAINING	RET.
SPECIFICATION	SPEC.
STATION	STA
STANDARD	STD
TOTAL	TOT
TYPICAL	TYP.
WEEPHOLE	WH
WINGWALL	WW

GRAPHIC SCALE

1" = 20' 0 5 10 15 20 40 60

DRWN.: JCD
CHKD.: KWC.
DEPT.: STRUCT.

R+G RUTH AND GOING, INC.
Structural Engineering
2160 Lundy Ave San Jose, CA 95131-1832 (408) 943-1640

JOB. # 17273

Roger L. Redig
ROGER L. REDIG S.E. 1431 EXP. 3-31-89
DATE: 3-28-88

Santa Clara Valley Water District

ACCEPTED BY DISTRICT: DATE 5/25/88

PROJECT ENGINEER RCE NO 25413
Bruce Wilson
DIVISION ENGINEER RCE NO 15851

REVISION	DATE	DESCRIPTION	BY	BY

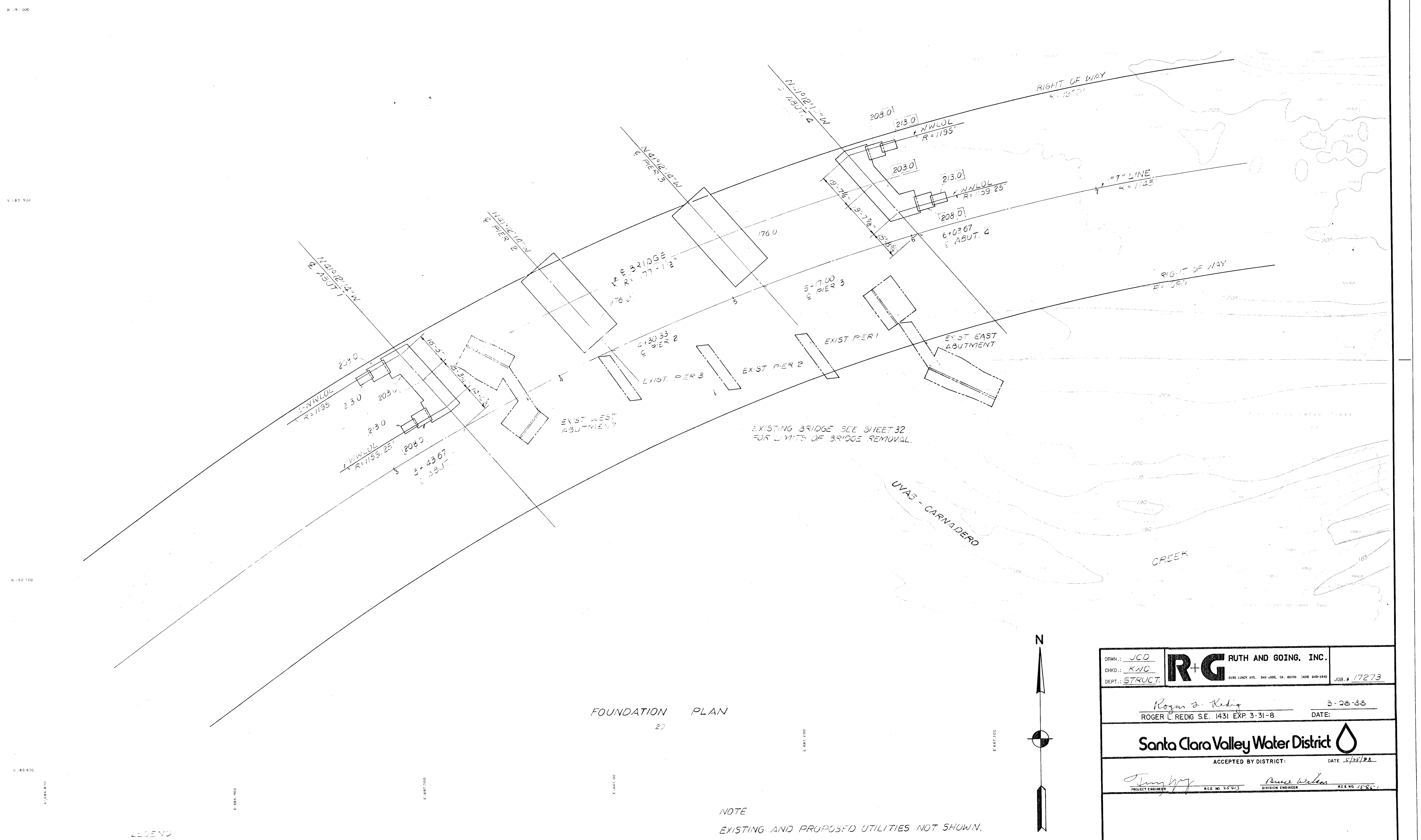
DESIGNED:
DRAWN:
CHECKED:

DECK ELEVATIONS AND GENERAL NOTES
THOMAS ROAD AT UVAS CREEK

SUBMITTED:
DATE APPROVED
SCALE AS SHOWN
SPEC. No.
SHEET 30
FILE No.

SANTA ~~CLARA_CA~~ Work Maps
SANTA CLARA_CA0260

ENVIRONMENTAL
ENHANCEMENT
THRU ENGINEERING



FOUNDATION PLAN
20

NOTE
EXISTING AND PROPOSED UTILITIES NOT SHOWN.

LEGEND
INDICATES BOTTOM OF NEW FOOTING ELEVATION.
INDICATES EXISTING SPOT ELEVATIONS
INDICATES EXISTING FOOTING.

GRAPHIC SCALE
1" = 20' 0 5 10 15 20 40 60

DRWN.: JCD CHKD.: KWC DEPT.: STRUCT.	R+G RUTH AND GOING, INC. 2180 LUNDY AVE. SAN JOSE, CA. 95131 (408) 943-1840	JOB.# 17273

Roger L. Redig
ROGER L. REDIG S.E. 1431 EXP. 3-31-8
DATE: 3-28-88

Santa Clara Valley Water District

ACCEPTED BY DISTRICT: DATE 5/25/88
PROJECT ENGINEER R.C.E. NO. 25413
Bruce Walton DIVISION ENGINEER R.C.E. NO. 13861

REVISION	DATE	DESCRIPTION	BY	BY

DESIGNED:
DRAWN:
CHECKED:

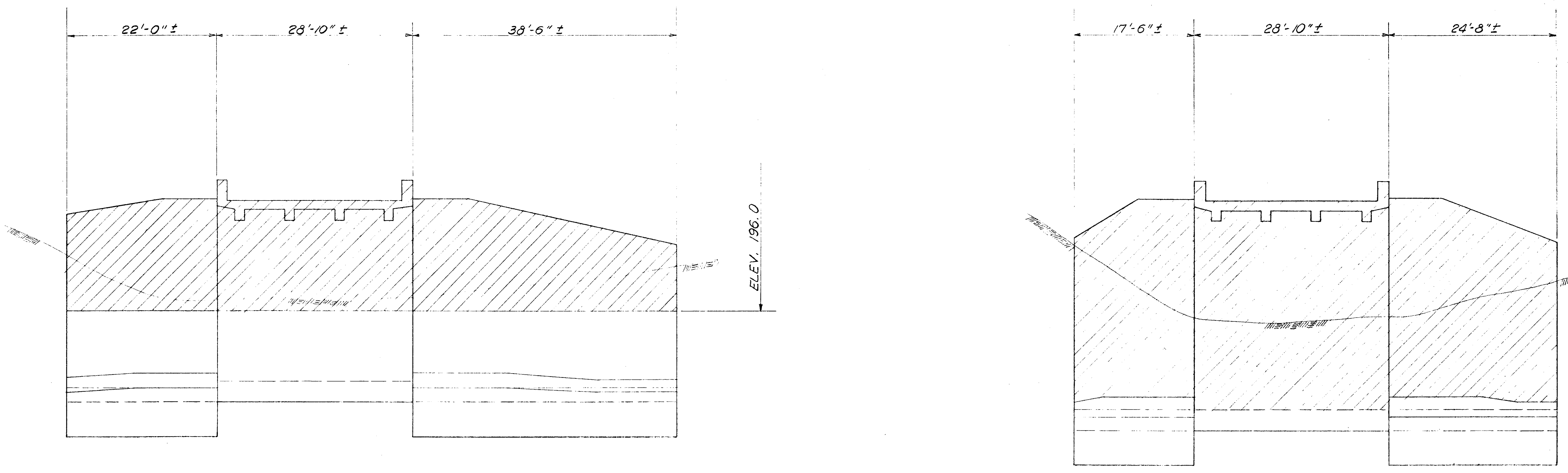
FOUNDATION PLAN
THOMAS ROAD AT UVAS CREEK

SUBMITTED:
DATE APPROVED
SCALE AS SHOWN
SPEC. No.
SHEET 31
FILE No.

JOB NO 873702
DATE OF PHOTOGRAPHY 8-25-87
SCALE 1"=20'

AERO-GEODETIC CORPORATION
CONSULTING PHOTOGRAMMETRIC ENGINEERS
1690 WARBURTON AVENUE SANTA CLARA CALIFORNIA 95050

SANTA CLARA_CA Work Maps
SANTA CLARA_CA0261

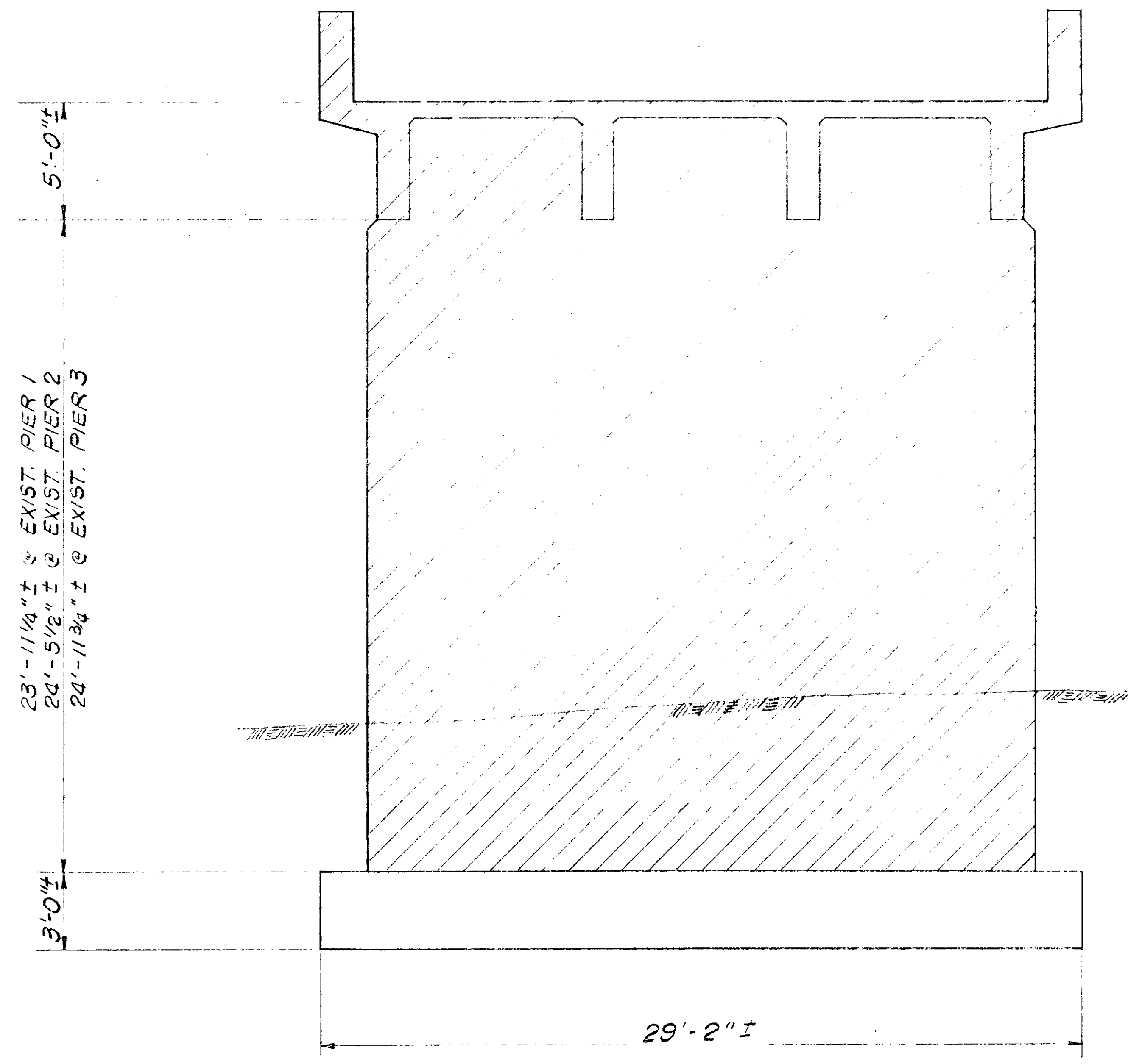


EXISTING EAST ABUTMENT
LOOKING UP STATION

EXISTING WEST ABUTMENT
LOOKING DOWN STATION

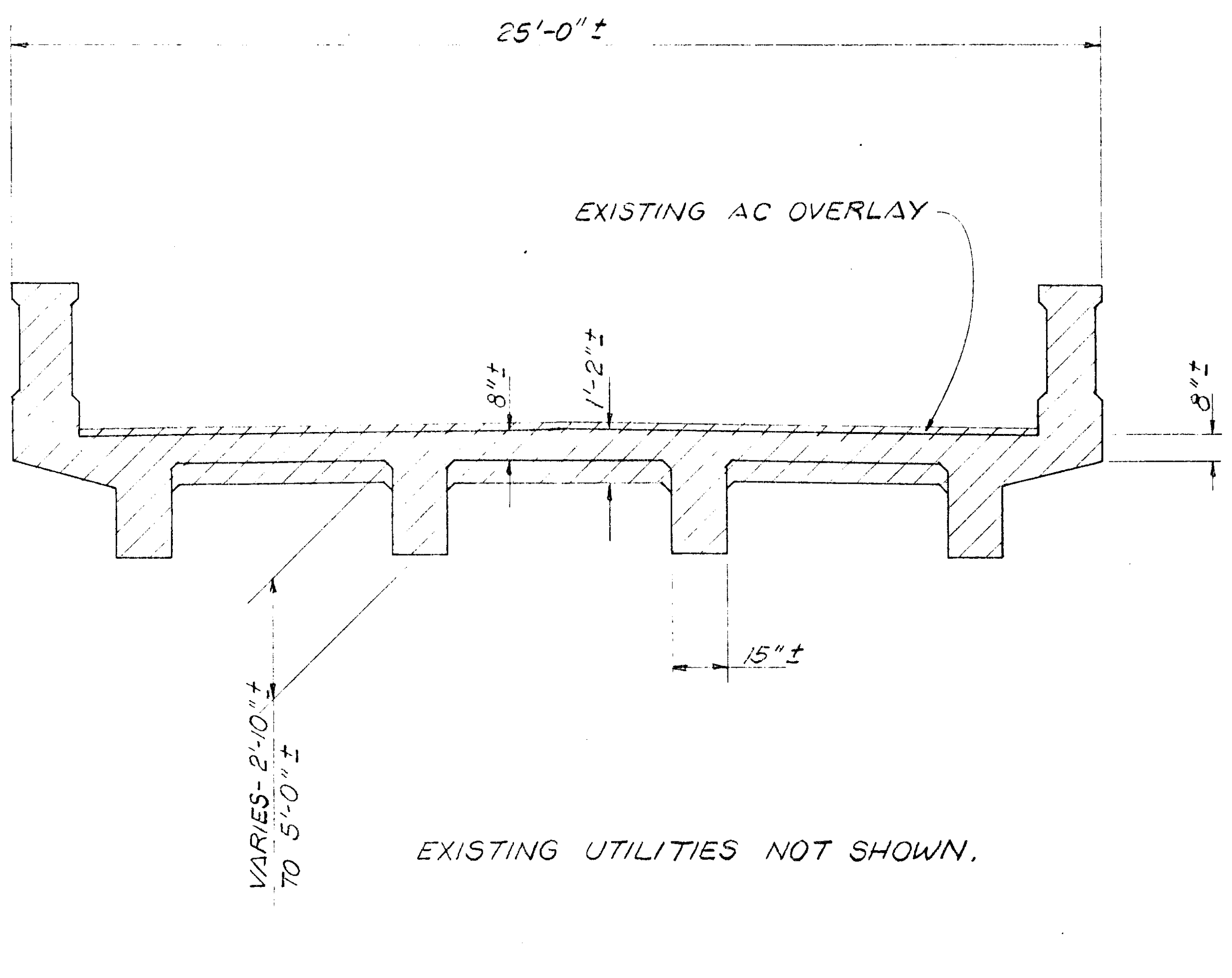
BRIDGE REMOVAL - ELEVATIONS
1/8" = 1'-0"

NOTE: SEE "EARTHWORK DETAIL" SHT. 33 FOR EARTHWORK DETAILS @ EXIST. WEST ABUTMENT & WINGWALLS.



EXISTING PIERS 1, 2 & 3

BRIDGE REMOVAL - ELEVATION
¼" = 1'-0"



EXISTING UTILITIES NOT SHOWN.

BRIDGE REMOVAL - SUPERSTRUCTURE
3/8" = 1'-0"

LEGEND

▨	INDICATES LIMITS OF BRIDGE REMOVAL
☐	INDICATES PORTIONS OF EXISTING BRIDGE TO REMAIN

ENVIRONMENTAL
ENHANCEMENT
THRU ENGINEERING

DRWN.: JCD
CHKD.: KWC
DEPT.: STRUCT.

R+G RUTH AND GOING, INC.
Structural Engineering
2160 Lundy Ave San Jose, CA 95131-1832 (408) 943-1640

JOB. # 17273

Roger L. Redig
ROGER L. REDIG S.E. 1431 EXP. 3-31-89

3-28-88
DATE:

Santa Clara Valley Water District

ACCEPTED BY DISTRICT: DATE 5/25/88

PROJECT ENGINEER R.C.E. NO. 25413
Bruce Wilson
DIVISION ENGINEER R.C.E. NO. 15851

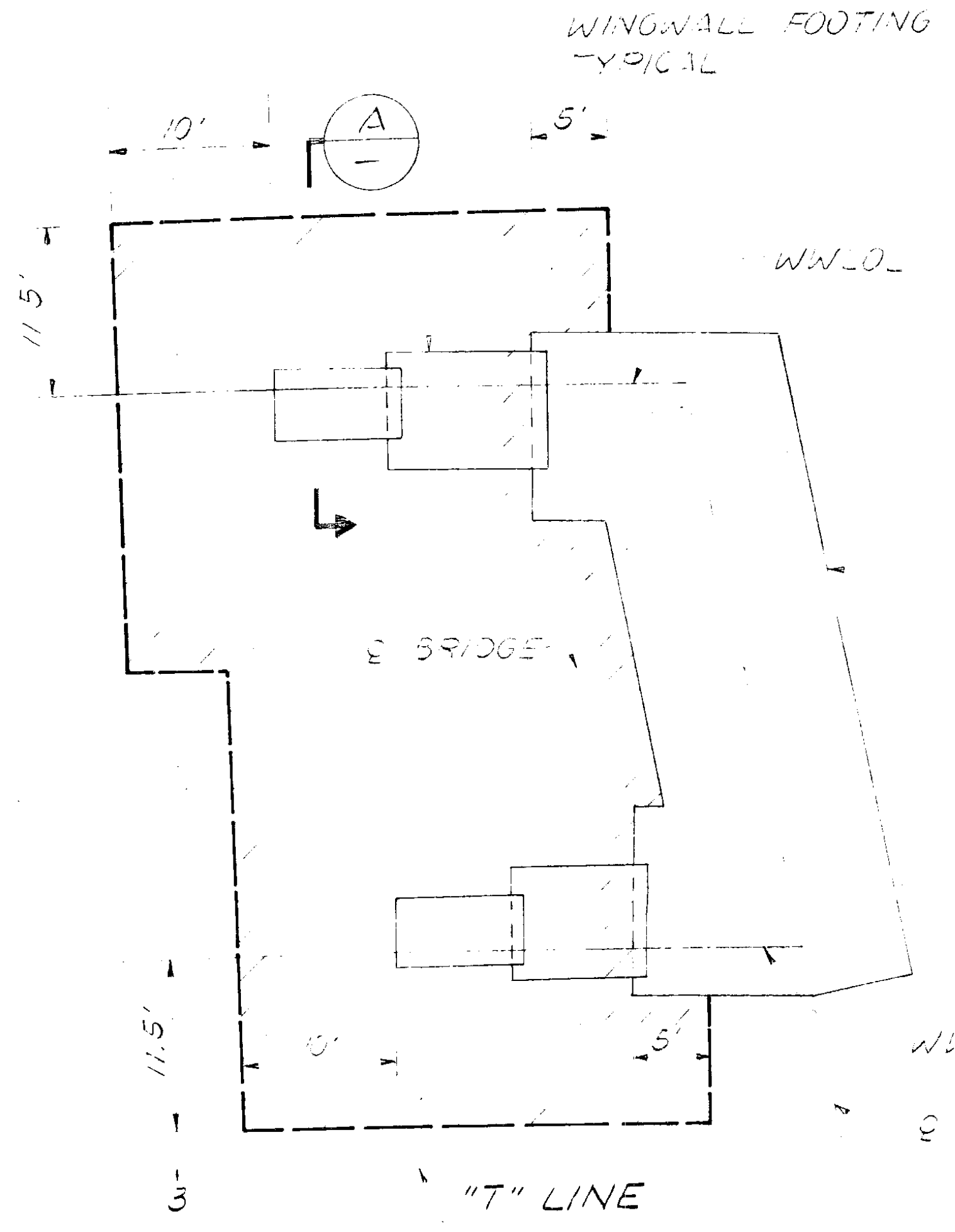
REVISION	DATE	DESCRIPTION	BY	BY
△				
△				

DESIGNED:
DRAWN:
CHECKED:
SUBMITTED:
DATE APPROVED

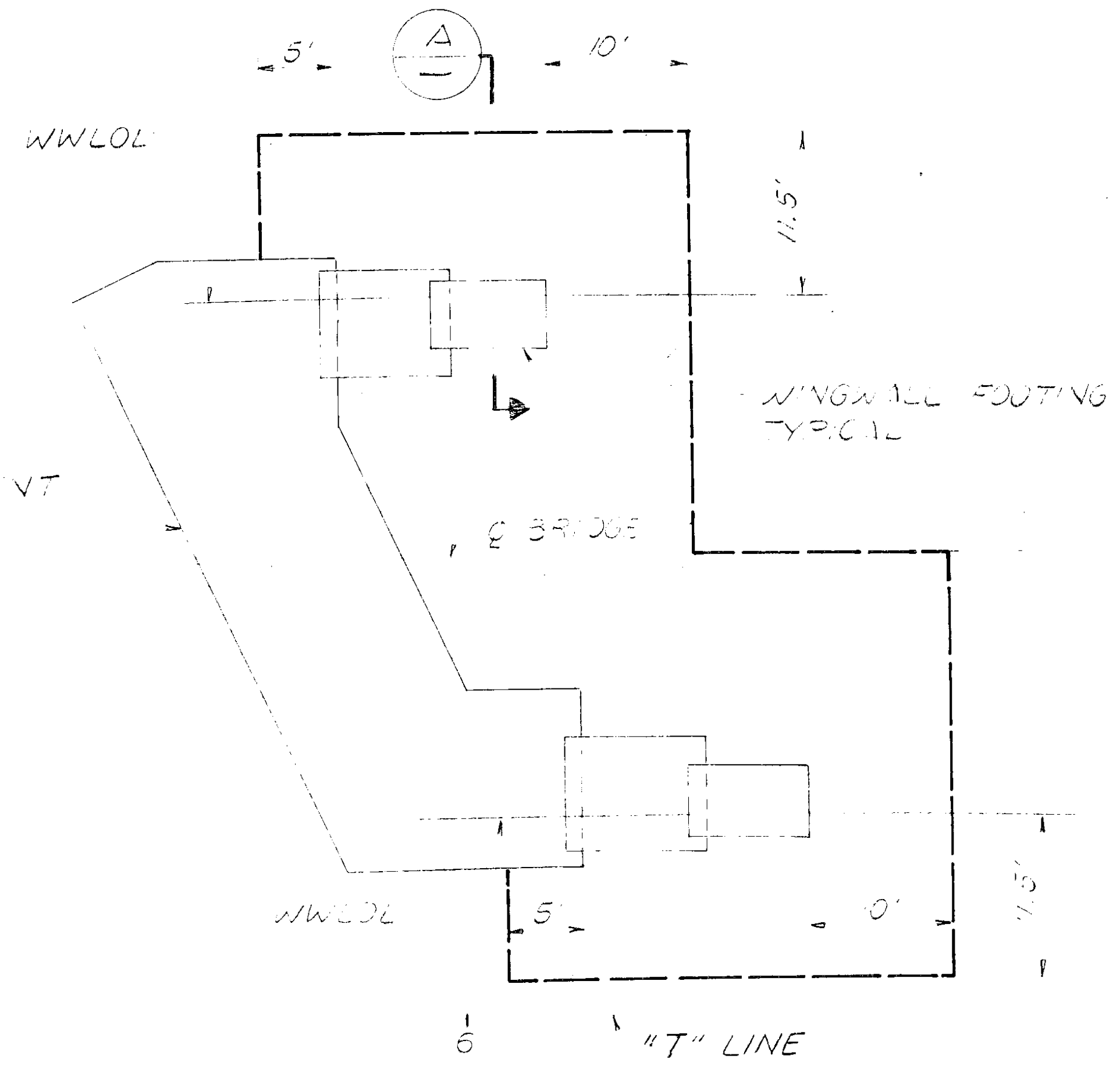
BRIDGE REMOVAL
THOMAS ROAD AT UVAS CREEK

SCALE AS SHOWN
SPEC. No.
SHEET 32
FILE No.

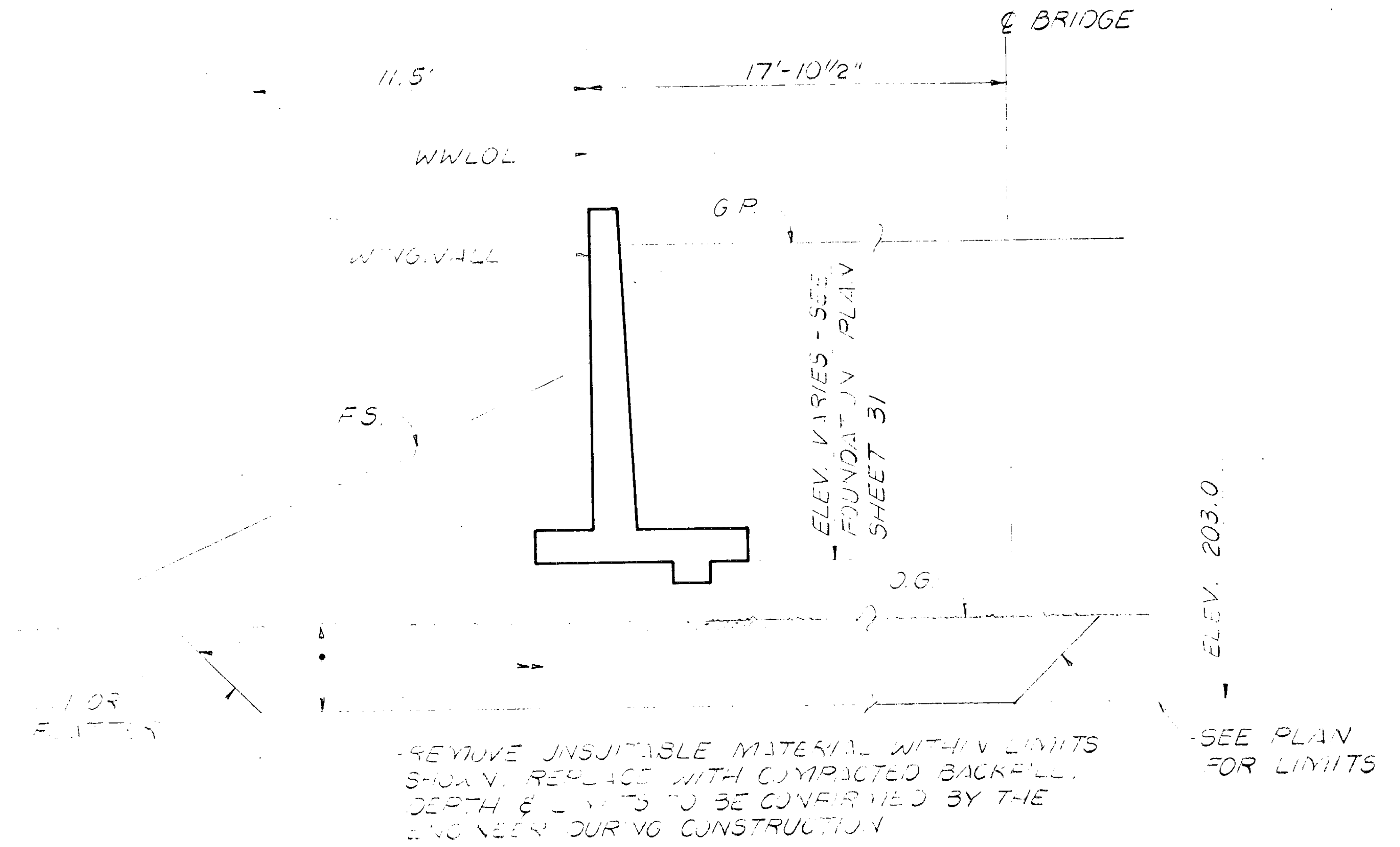
SANTA CLARA ~~CA~~ Work Maps
SANTA CLARA_CA0262



PLAN - ABUTMENT 1



PLAN - ABUTMENT 4


℄ BRIDGE
11.5'
17'-10½"
WWLOL
G.P.
WINGWALL
F.S.
ELEV. VARIES - SEE FOUNDATION PLAN SHEET 31
ELEV. 203.0
O.G.
1:1 OR FLATTER
REMOVE UNSUITABLE MATERIAL WITHIN LIMITS SHOWN. REPLACE WITH COMPACTED BACKFILL. DEPTH & LIMITS TO BE CONFIRMED BY THE ENGINEER DURING CONSTRUCTION
SEE PLAN FOR LIMITS

SECTION A

ABBREVIATIONS

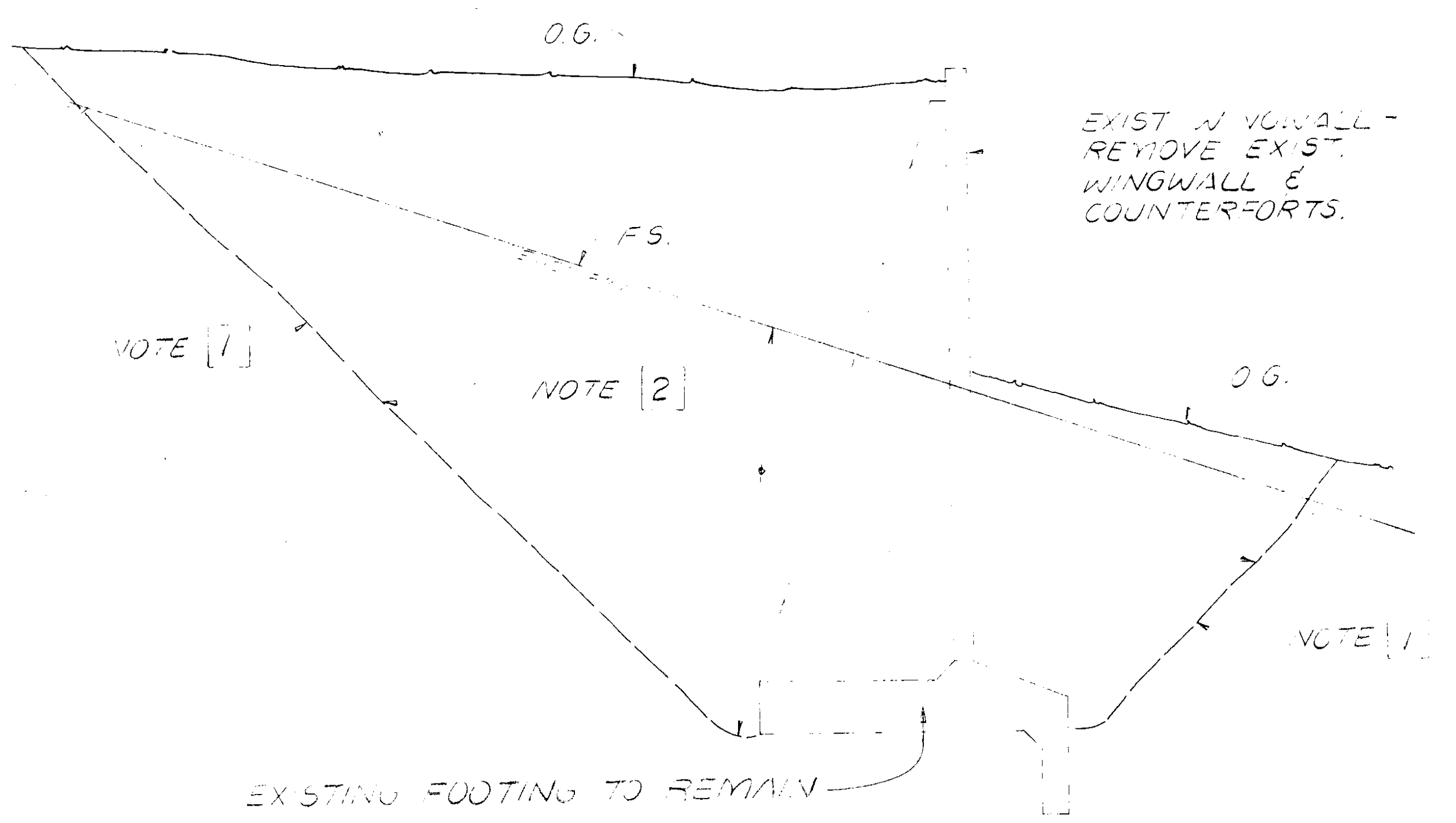
O.G. ORIGINAL GROUND
F.S. PLANNED FINISH SURFACE
G.P. PLANNED GRADING PLANE
WWLOL WINGWALL LAYOUT LINE

LEGEND

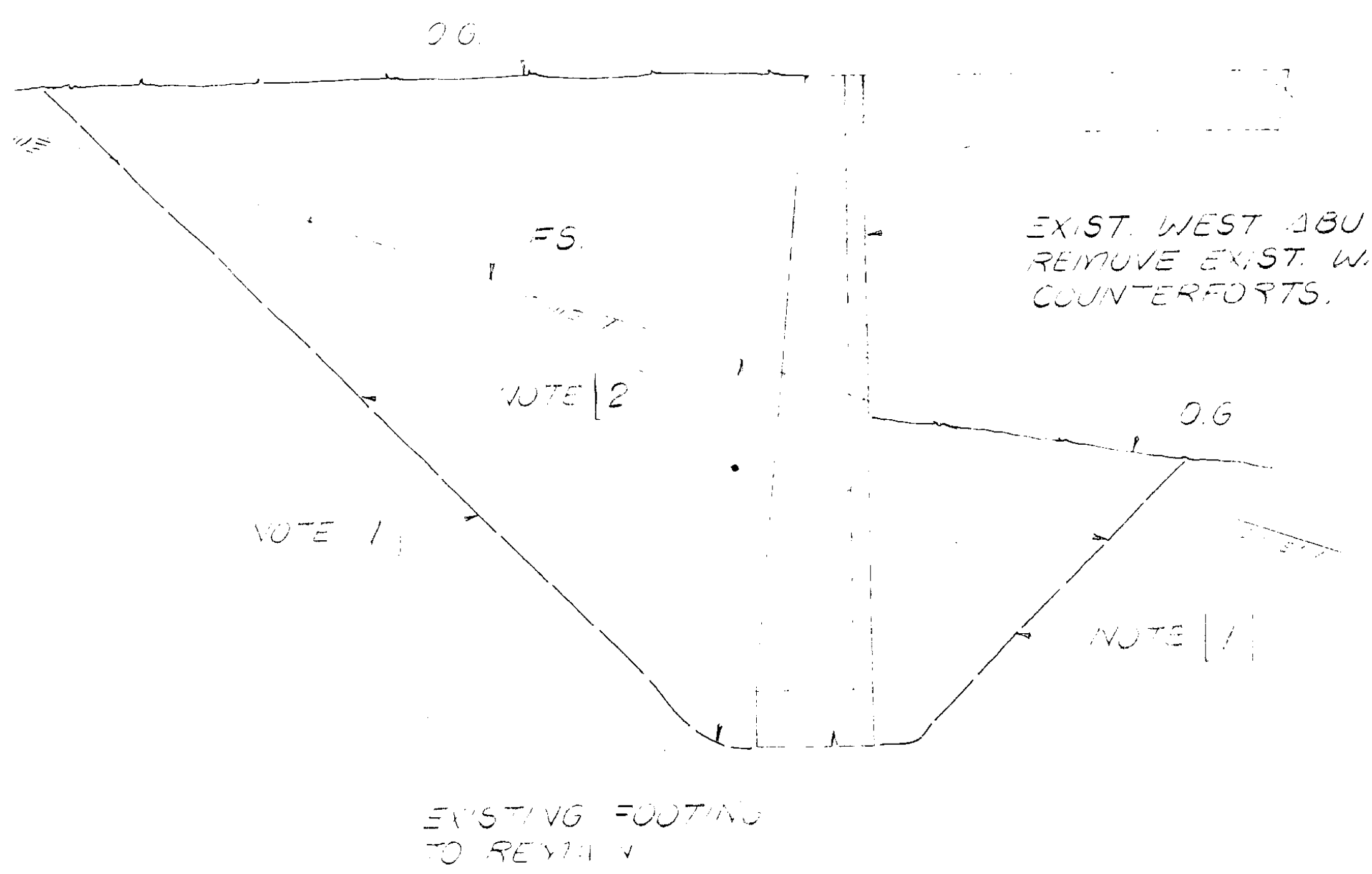
▭ LIMITS OF REMOVAL OF UNSUITABLE FOUNDATION MATERIAL

NOT TO SCALE

EARTHWORK DETAILS @ ABUTMENTS 1 AND 4


O.G.
EXIST WINGWALL - REMOVE EXIST. WINGWALL & COUNTERFORTS.
F.S.
NOTE 1
NOTE 2
O.G.
NOTE 1
EXISTING FOOTING TO REMAIN

EXISTING WEST WINGWALLS


O.G.
F.S.
EXIST WEST ABUTMENT - REMOVE EXIST. WALL & COUNTERFORTS.
NOTE 2
O.G.
NOTE 1
NOTE 1
EXISTING FOOTING TO REMAIN

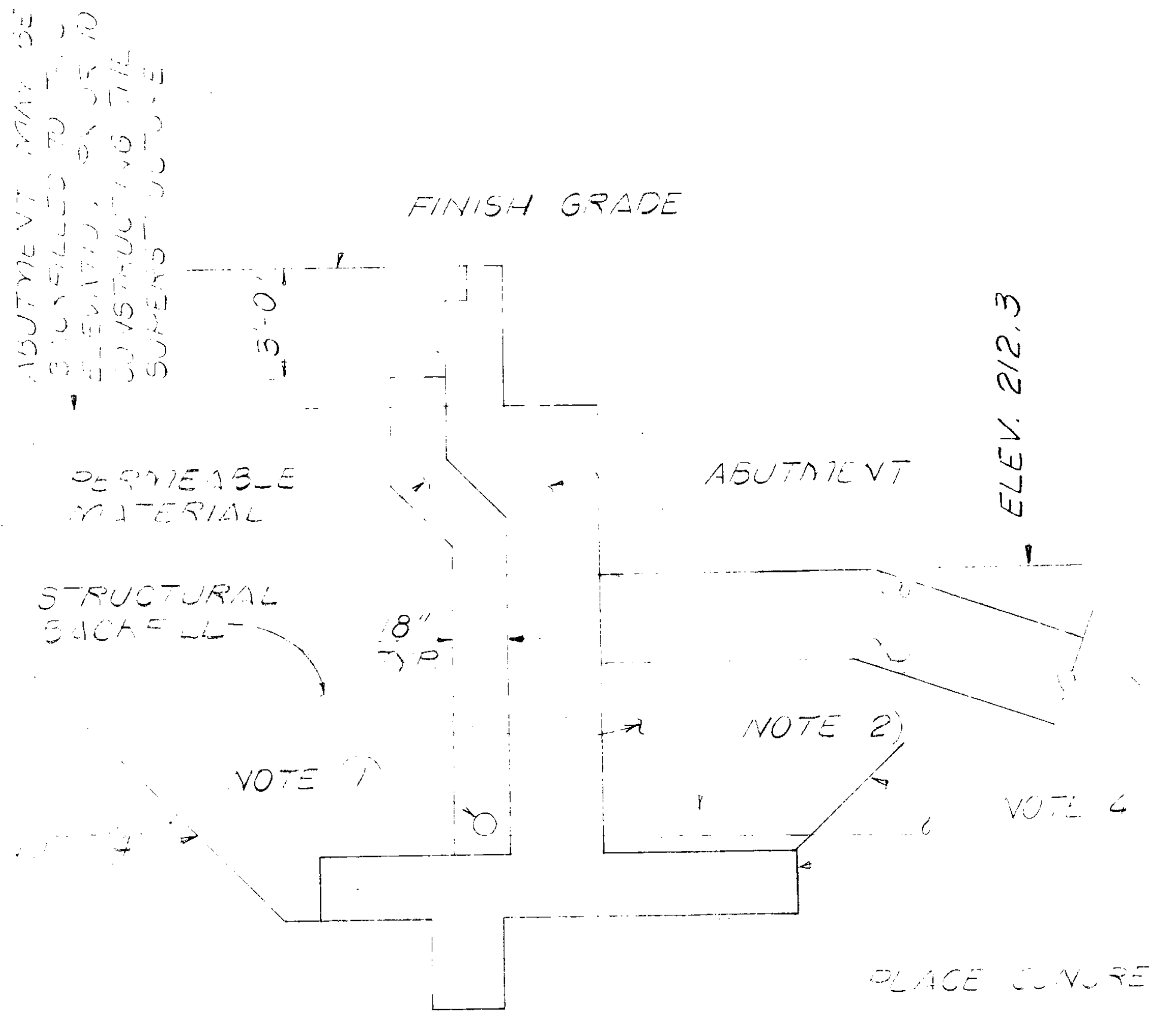
EXISTING WEST ABUTMENT

NOTES:

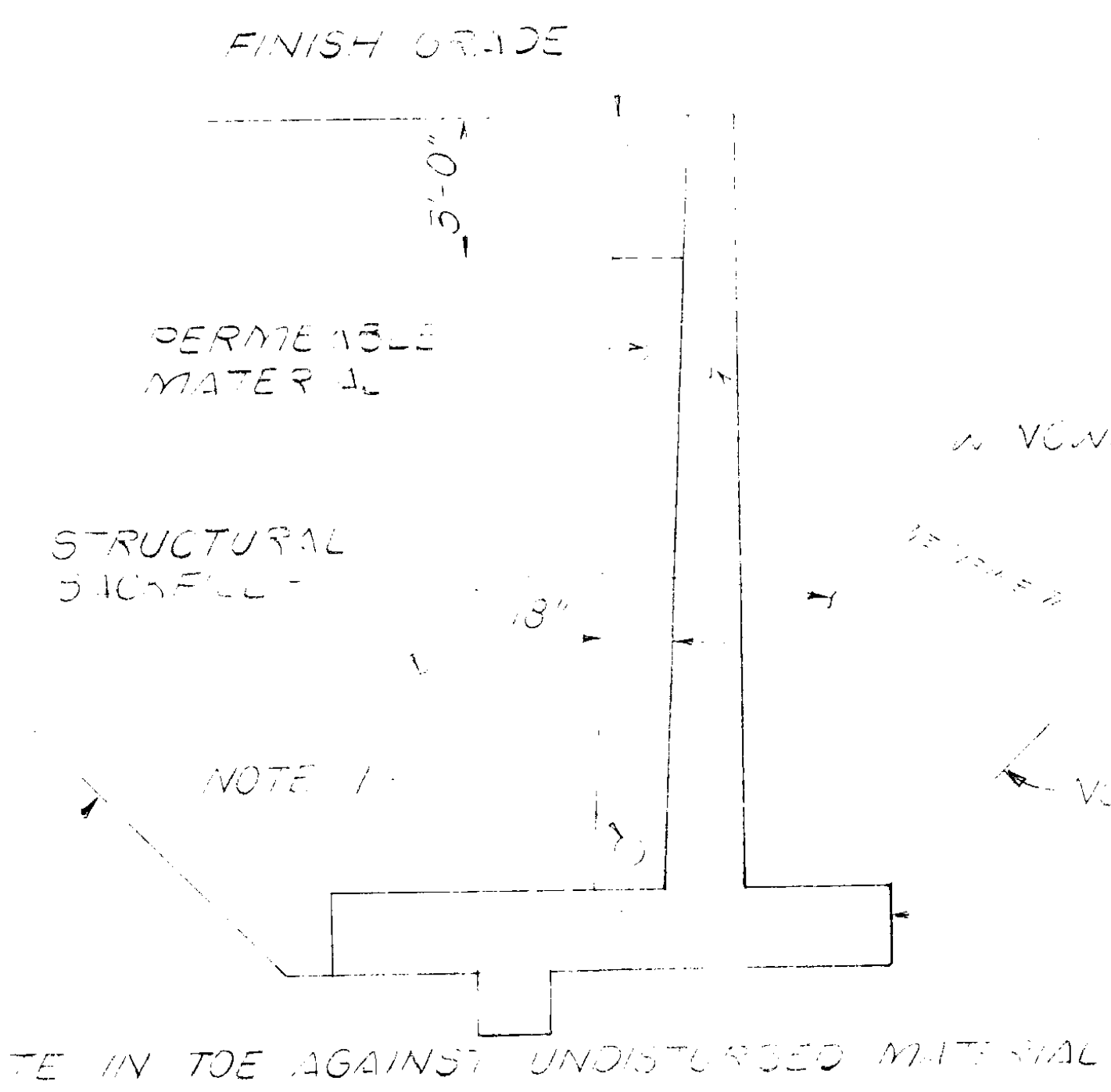
1. APPROXIMATE LIMITS OF EXISTING STRUCTURE BACKFILL. EXACT LIMITS TO BE ESTABLISHED BY THE ENGINEER DURING CONSTRUCTION. BENCH AND KEY SLOPE AS DIRECTED BY ENGINEER PRIOR TO PLACING BACKFILL.
2. REMOVE EXISTING STRUCTURE BACKFILL TO THE LIMITS ESTABLISHED BY THE ENGINEER DURING CONSTRUCTION. REPLACE WITH COMPACTED BACKFILL.

NOT TO SCALE

EARTHWORK DETAILS @ EXISTING WEST ABUTMENT & WINGWALLS

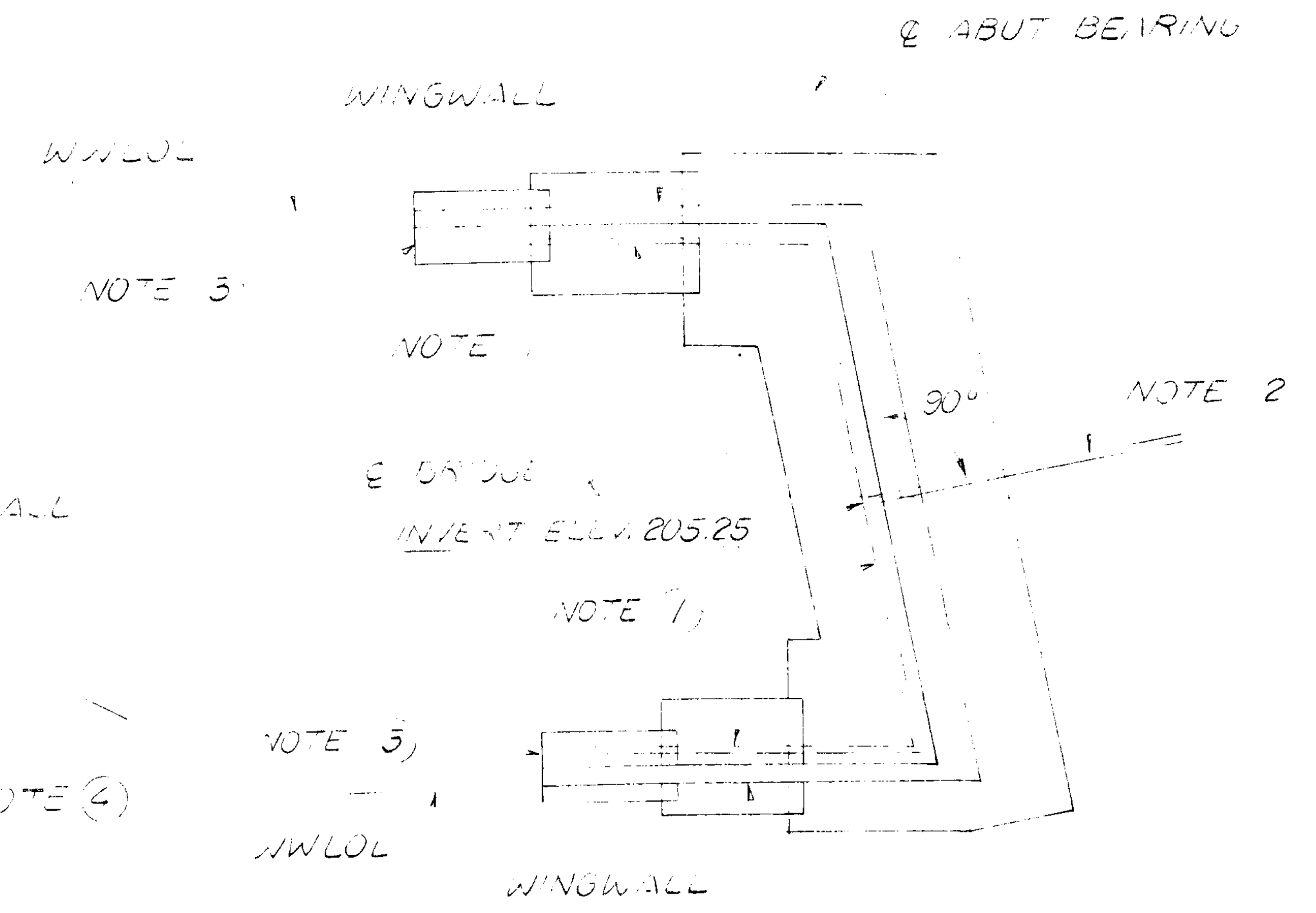


ABUTMENT SECTION



WINGWALL SECTION

PLACE CONCRETE IN TOE AGAINST UNDISTURBED MATERIAL



ABUTMENT 1 SHOWN
ABUTMENT 4 SIMILAR

PLAN

NOTES:

1. 8" PERFORATED STEEL PIPE (P.S.P.), 0.064" THICKNESS. SLOPE TO DRAIN @ 2% MINIMUM
2. 8" CORRUGATED STEEL PIPE (C.S.P.). SLOPE TO DRAIN TO CHANNEL @ 2% MINIMUM.
3. 4" MINIMUM THICK CONCRETE PLUG @ END OF PIPE.

④ 1:1 OR FLATTER AS REQ'D FOR STABILITY.

NOT TO SCALE

ABUTMENT & WINGWALL BACKFILL & DRAINAGE DETAILS

DRWN.: JCD CHKD.: KWC DEPT.: STRUCT.	R+G RUTH AND GOING, INC. Structural Engineering 2160 Lundy Ave. San Jose, CA 95131-1832 (408) 943-1640	JOB.# 17273

Rogen L. Redig
ROGER L. REDIG S.E. 1431 EXP. 3-31-89
3-28-88
DATE:

Santa Clara Valley Water District

ACCEPTED BY DISTRICT: DATE 5/25/88
PROJECT ENGINEER RCE NO 25413
Bruce Wilson
DIVISION ENGINEER RCE NO V5851

REVISION	DATE	DESCRIPTION	BY	BY

DESIGNED
DRAWN
CHECKED

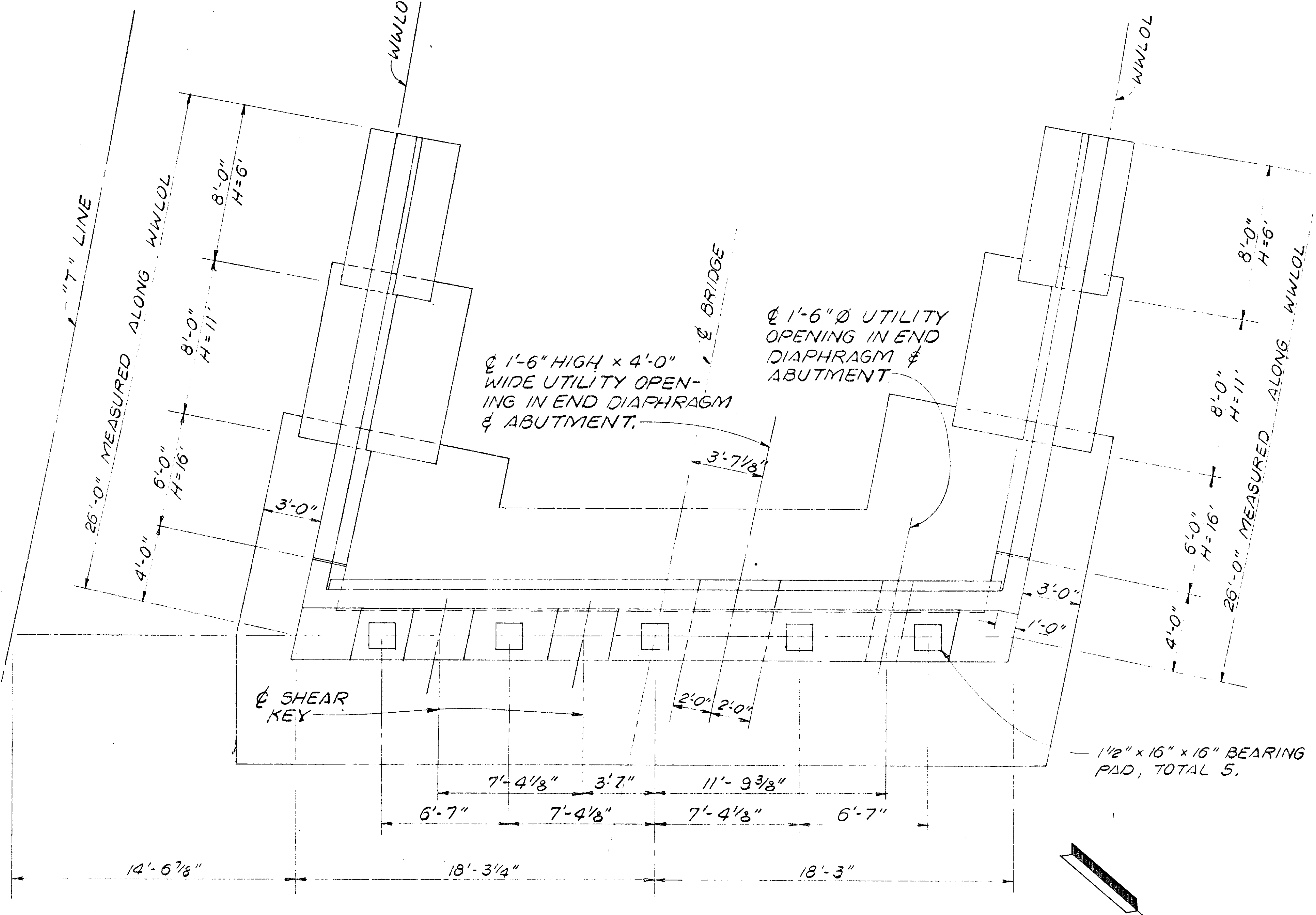
EARTHWORK DETAILS
THOMAS ROAD AT UVAS CREEK

SUBMITTED
DATE APPROVED
SCALE AS SHOWN
SPEC. No.
SHEET 33
FILE No.

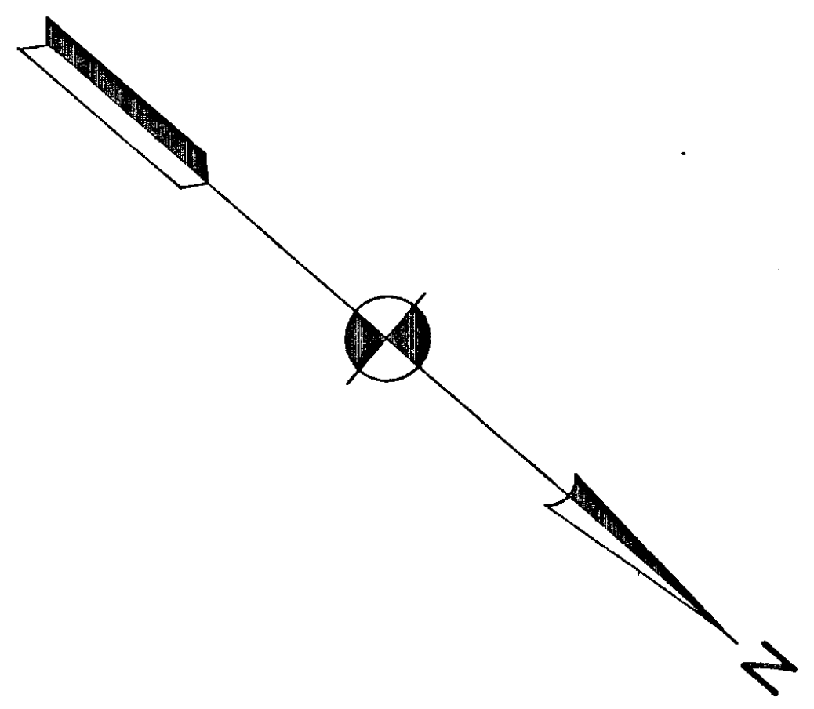
ENVIRONMENTAL ENHANCEMENT THRU ENGINEERING

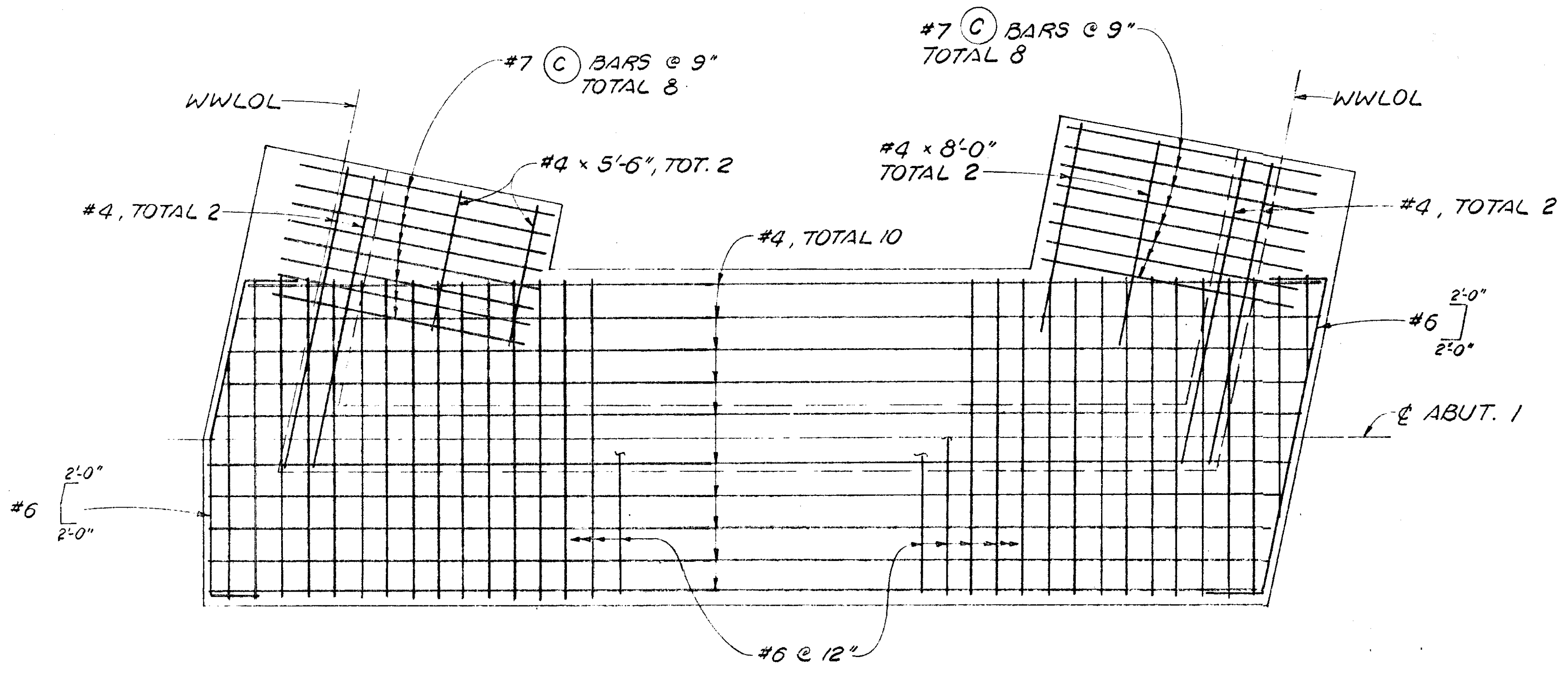
SANTA CLARA_CA Work Maps
SANTA CLARA_CA0263

ENVIRONMENTAL ENHANCEMENT THRU ENGINEERING


"T" LINE
WWLOL
WWLOL
26'-0" MEASURED ALONG WWLOL
26'-0" MEASURED ALONG WWLOL
8'-0" H=6'
8'-0" H=11'
6'-0" H=16'
4'-0"
3'-0"
1'-0"
℄ BRIDGE
℄ 1'-6" HIGH × 4'-0" WIDE UTILITY OPENING IN END DIAPHRAGM & ABUTMENT.
℄ 1'-6"Ø UTILITY OPENING IN END DIAPHRAGM & ABUTMENT
3'-7⅛"
℄ SHEAR KEY
2'-0" 2'-0"
1½" × 16" × 16" BEARING PAD, TOTAL 5.
7'-4⅛" 3'7" 11'-9⅜"
6'-7" 7'-4⅛" 7'-4⅛" 6'-7"
14'-6⅞" 18'-3¼" 18'-3"

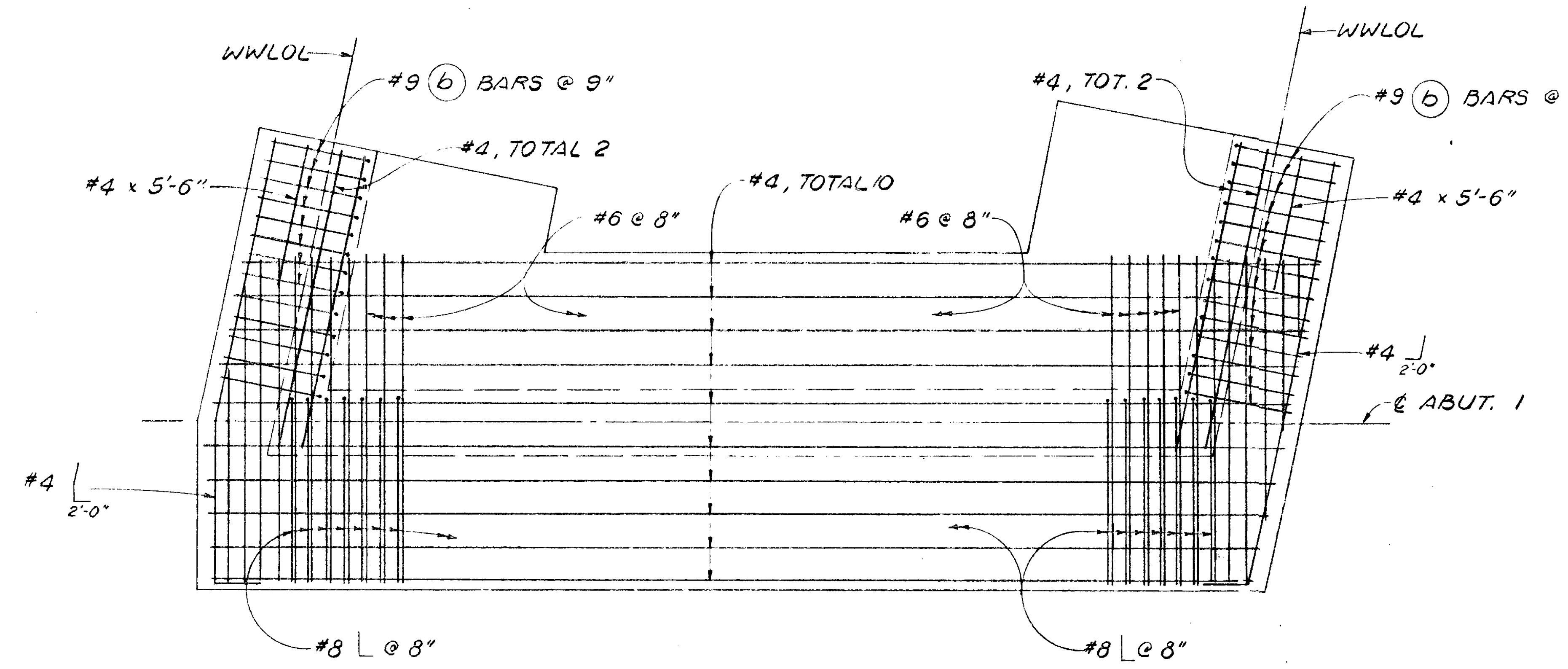
ABUTMENT 1 - PLAN 1/4" = 1'-0"





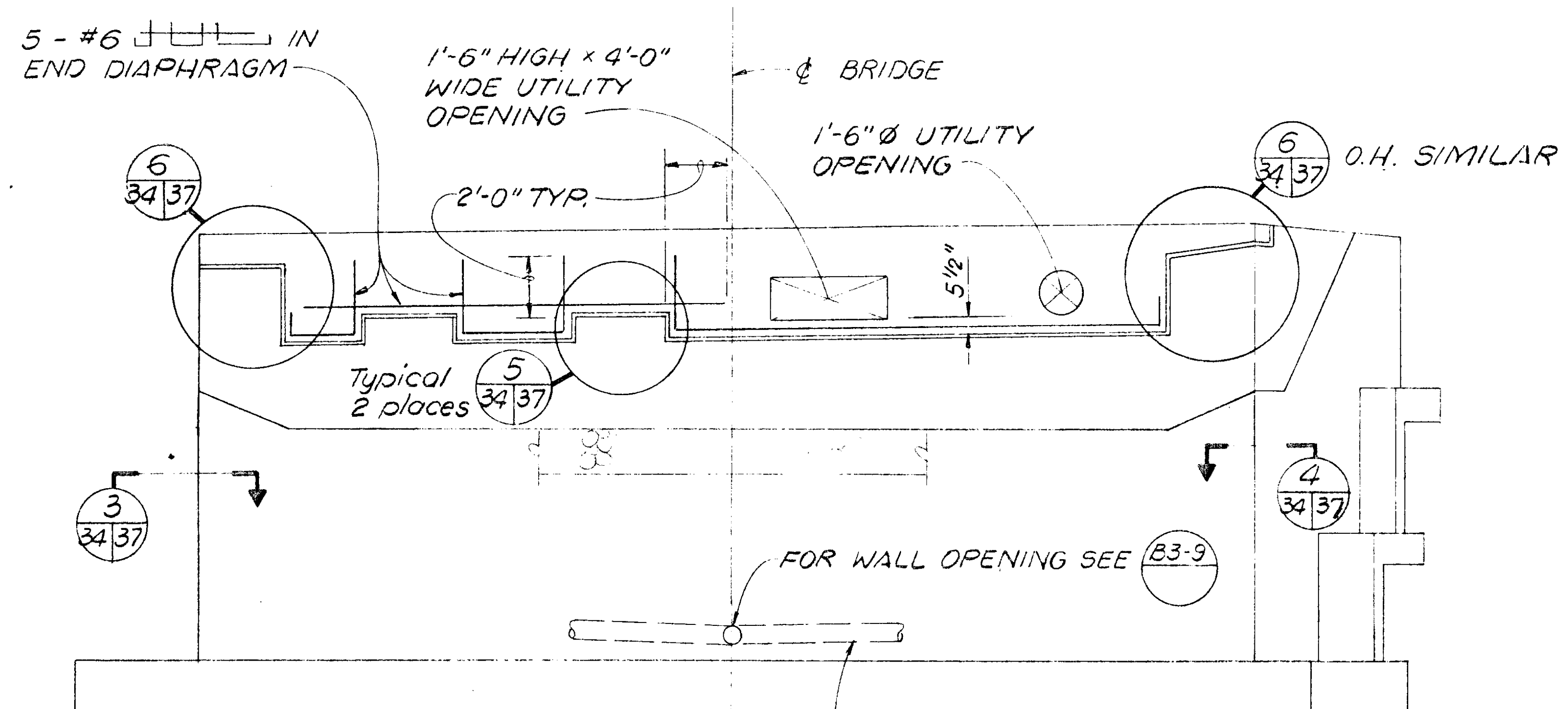
NOTE : ALL REINF. NOT SHOWN.

TOP REINFORCEMENT PLAN
1/4" = 1'-0"



NOTE : ALL REINF. NOT SHOWN

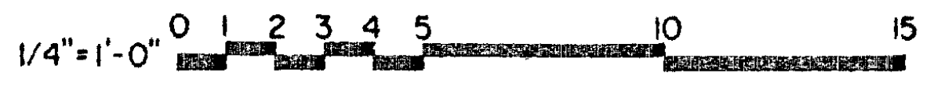
BOTTOM REINFORCEMENT PLAN
1/4" = 1'-0"


5 - #6 IN END DIAPHRAGM
1'-6" HIGH × 4'-0" WIDE UTILITY OPENING
℄ BRIDGE
1'-6"Ø UTILITY OPENING
6 34|37
6 34|37
O.H. SIMILAR
2'-0" TYP.
5½"
Typical 2 places 5 34|37
3 34|37
4 34|37
FOR WALL OPENING SEE B3-9
8" PERFORATED STEEL PIPE BEHIND ABUTMENT. SEE "ABUTMENT, WINGWALL BACKFILL & DRAINAGE DETAILS" ON SHEET. 33

ABUTMENT 1 - ELEVATION 1/4" = 1'-0"
LOOKING DOWNSTATION

NOTES:
SEE (B7-10 / U-2) FOR UTILITY OPENING IN ABUTMENT BACKWALL
SEE (B7-10 / U-3) FOR UTILITY OPENING IN END DIAPHRAGM
CONSTRUCT UTILITY OPENING PARALLEL & UTILITY.

GRAPHIC SCALE



DRWN.: JCD
CHKD.: KWC
DEPT.: STRUCT.

R+G RUTH AND GOING, INC.
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JOB.# 17273

Roger L. Redig
ROGER L. REDIG S.E. 1431 EXP. 3-31-89
3-28-88
DATE:

Santa Clara Valley Water District

ACCEPTED BY DISTRICT: DATE 5/25/88

PROJECT ENGINEER R.C.E. NO. 25413
Bruce Wilson
DIVISION ENGINEER R.C.E. NO. 15837

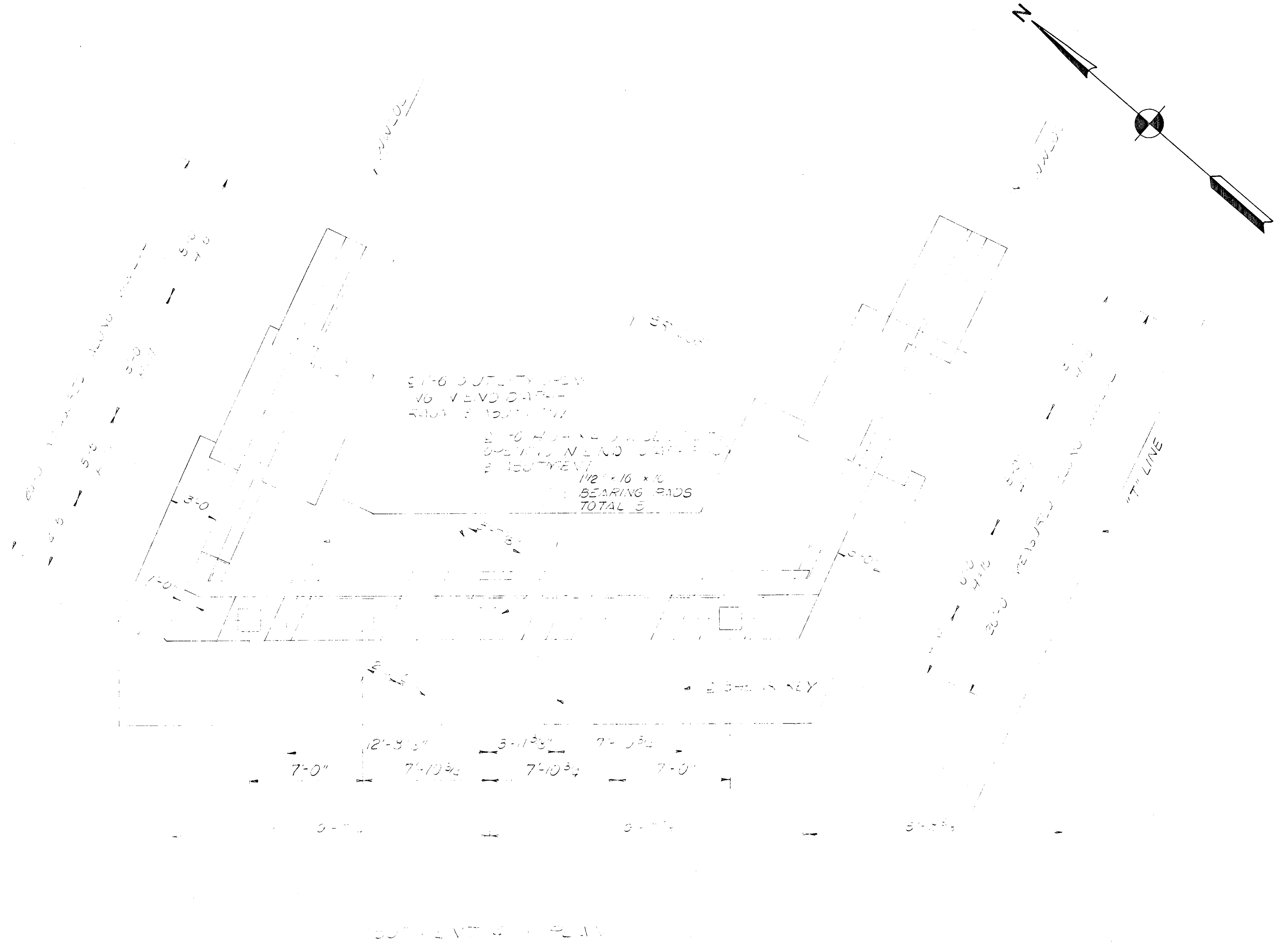
REVISION	DATE	DESCRIPTION	BY	BY
△				
△				

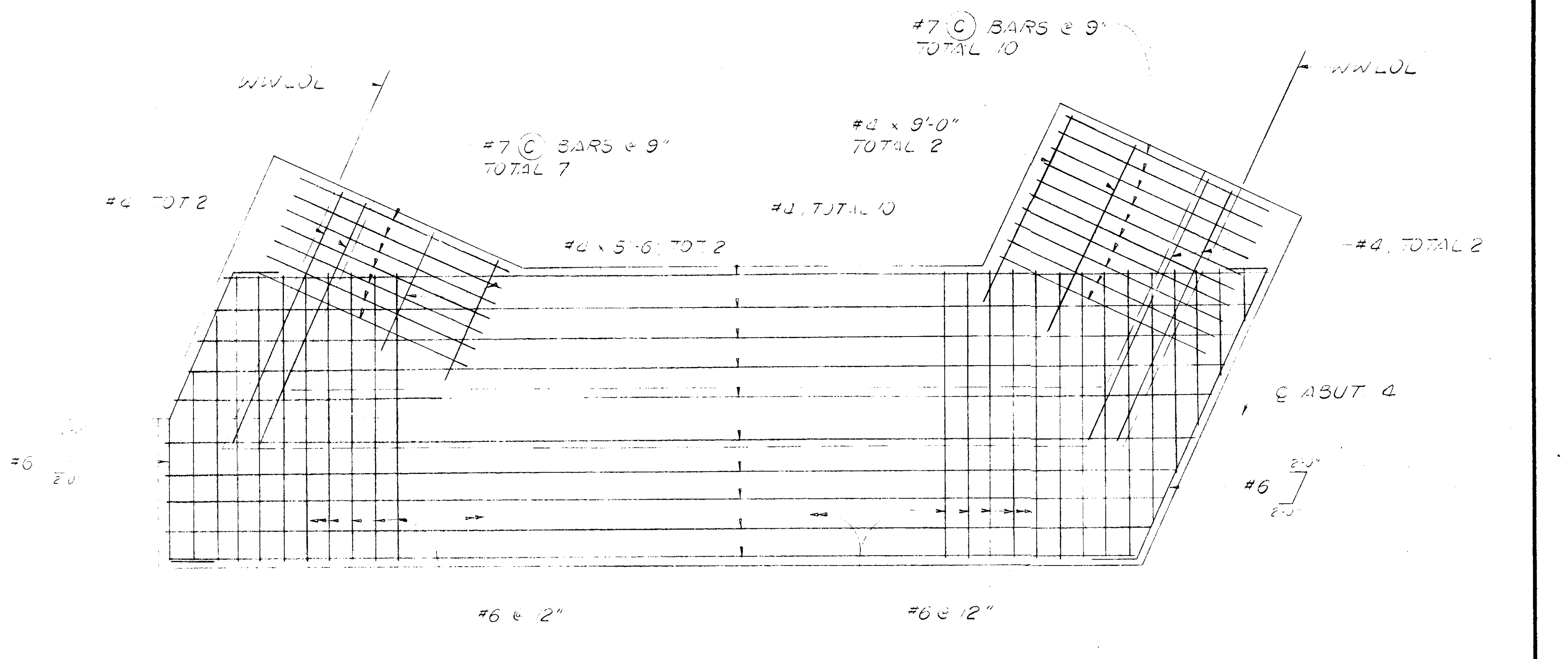
DESIGNED:
DRAWN:
CHECKED:

ABUTMENT 1
THOMAS ROAD AT UVAS CREEK

SUBMITTED:
DATE APPROVED
SCALE AS SHOWN
SPEC. No.
SHEET 34
FILE No.

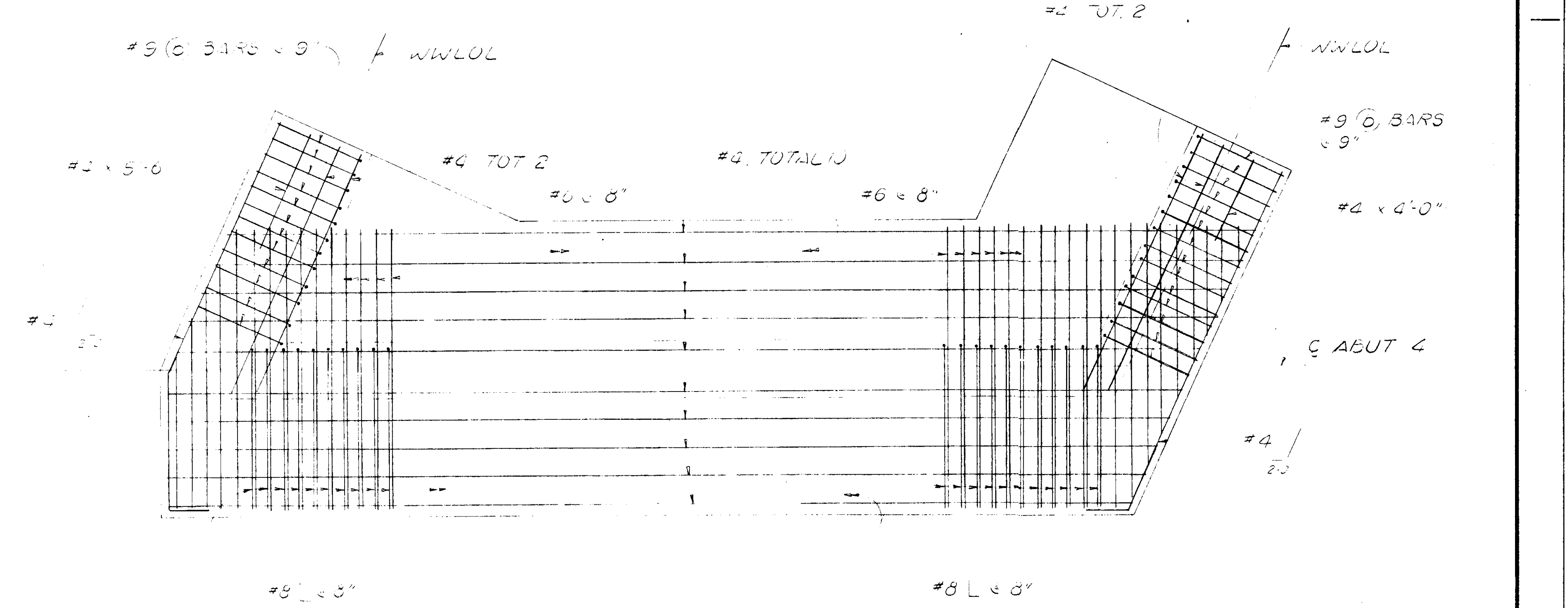
SANTA CLARA_CA Work Maps
SANTA CLARA_CA0264





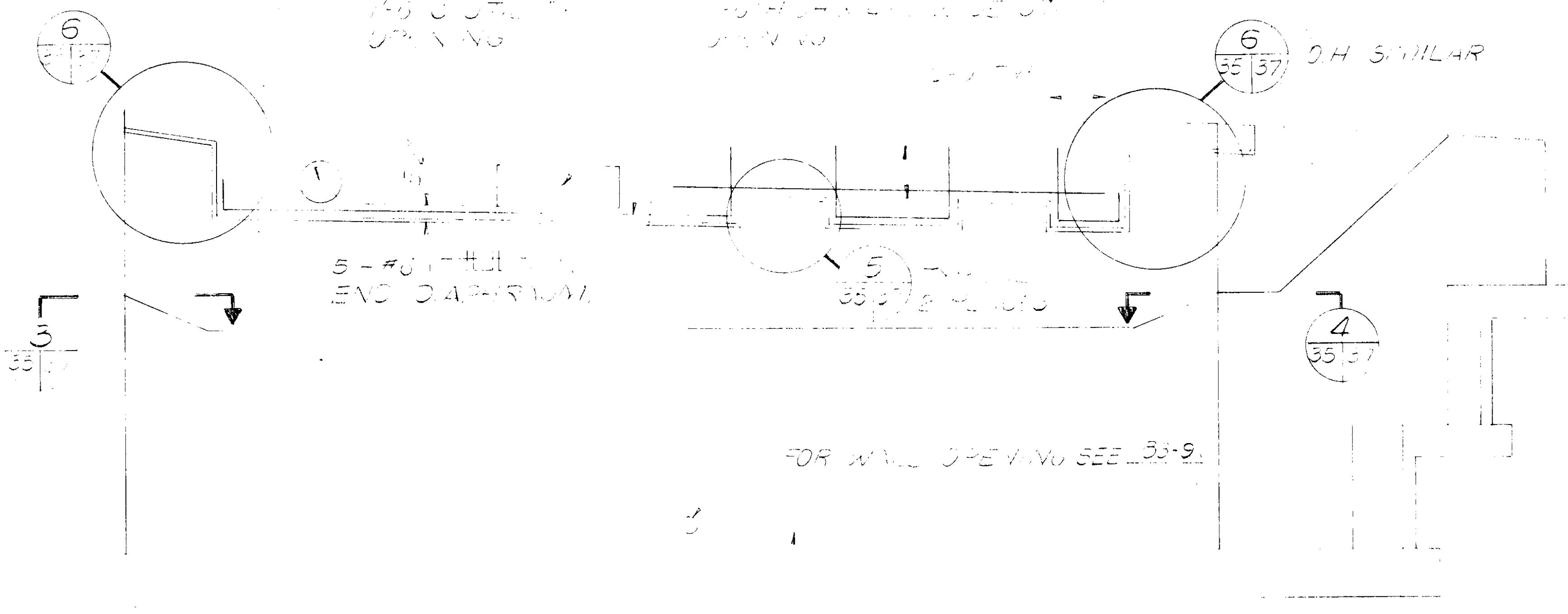
NOTE: ALL REINF NOT SHOWN

TOP REINFORCEMENT PLAN
1/4" = 1'-0"



NOTE: ALL REINF NOT SHOWN.

BOTTOM REINFORCEMENT PLAN
1/4" = 1'-0"



SUPERSTRUCTURE STEEL ... ABUTMENT, SEE ABUTMENT, WINGWALL BACKFILL & DRAINAGE DETAILS ON SHEET 33

ABUTMENT 4 - ELEVATION

NOTES:

SEE (37-10 / U-2) FOR UTILITY OPENING ... BACKWALL

SEE (37-10 / U-3) FOR UTILITY OPENING IN END DIAPHRAGM

CONSTRUCT UTILITY OPENINGS PARALLEL TO ℄ UTILITY

GRAPHIC SCALE
1/4" = 1'-0" 0 1 2 3 4 5 10 15

ENVIRONMENTAL
ENHANCEMENT
THRU ENGINEERING

DRWN.: JCD CHKD.: KWC DEPT.: STRUCT.	RUTH AND GOING, INC. Structural Engineering 2160 Lundy Ave San Jose, CA 95131-1832 (408) 943-1640	JOB. # 17273

Roger L. Redig
ROGER L. REDIG S.E. 1431 EXP. 3-31-89
3-28-88
DATE:

Santa Clara Valley Water District

ACCEPTED BY DISTRICT: DATE 5/25/88

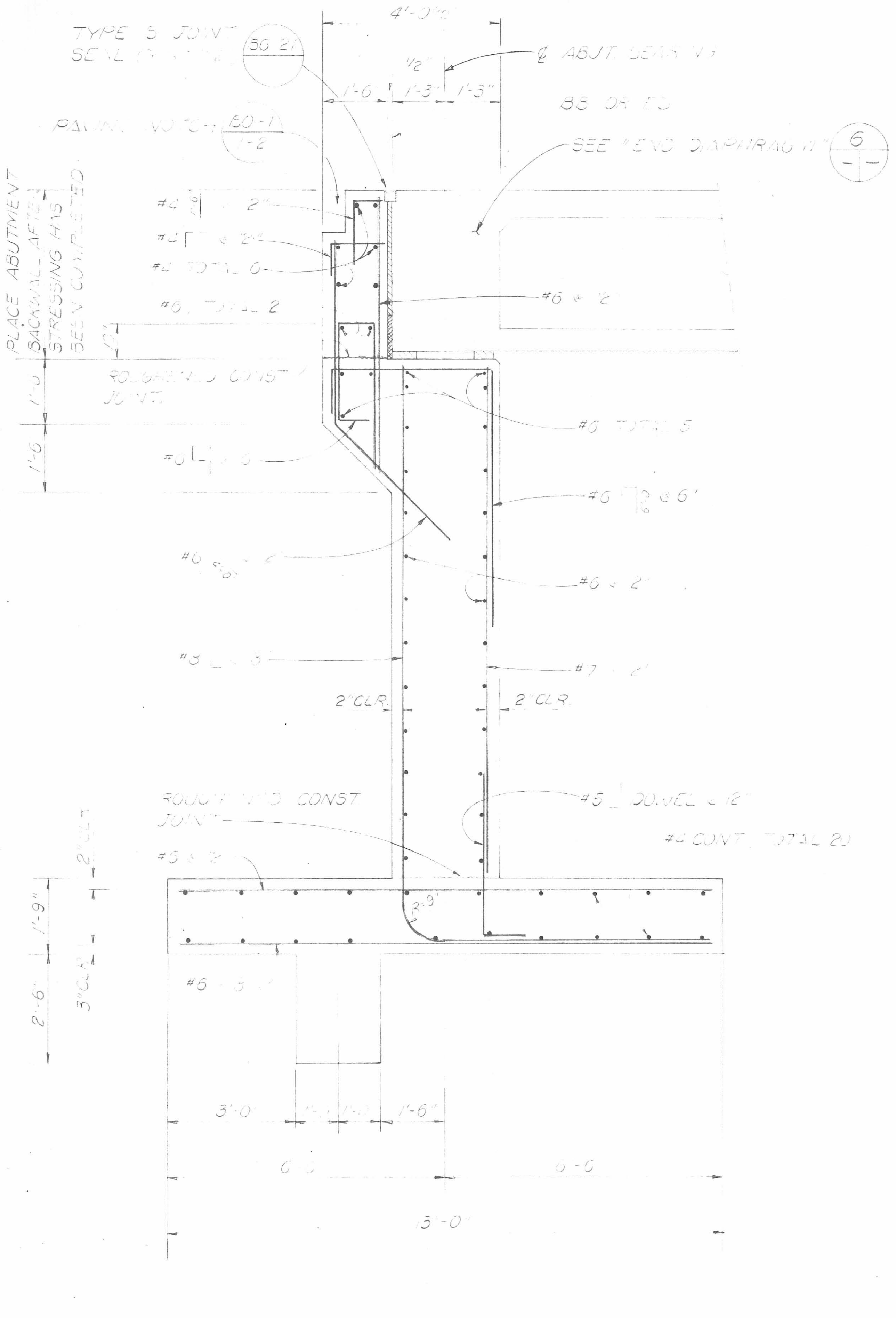
PROJECT ENGINEER RCE NO 25413
Bruce Wilson
DIVISION ENGINEER RCE NO 15831

REVISION	DATE	DESCRIPTION	BY	BY
△				
△				

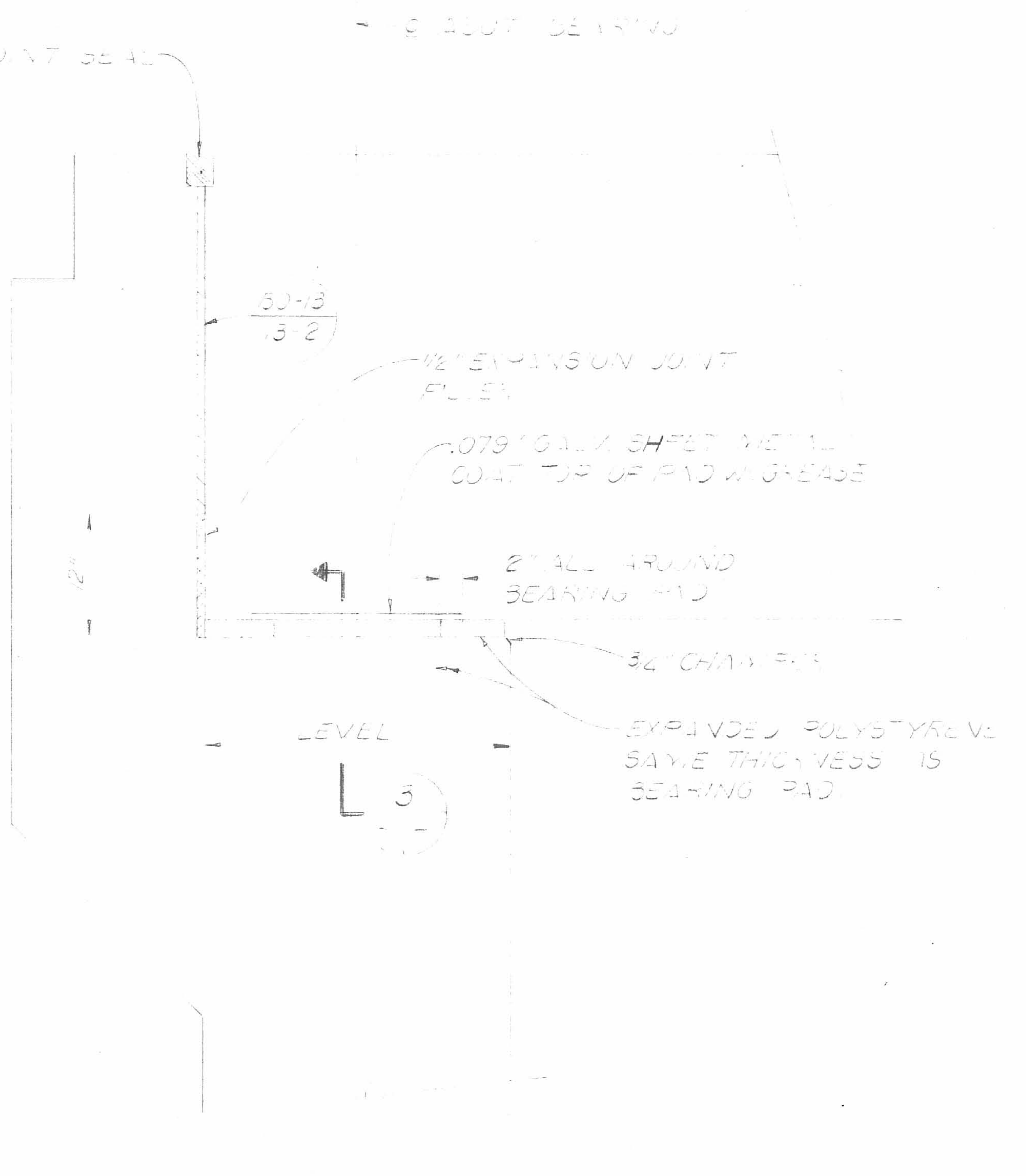
DESIGNED:
DRAWN:
CHECKED:

ABUTMENT 4
THOMAS ROAD AT UVAS CREEK

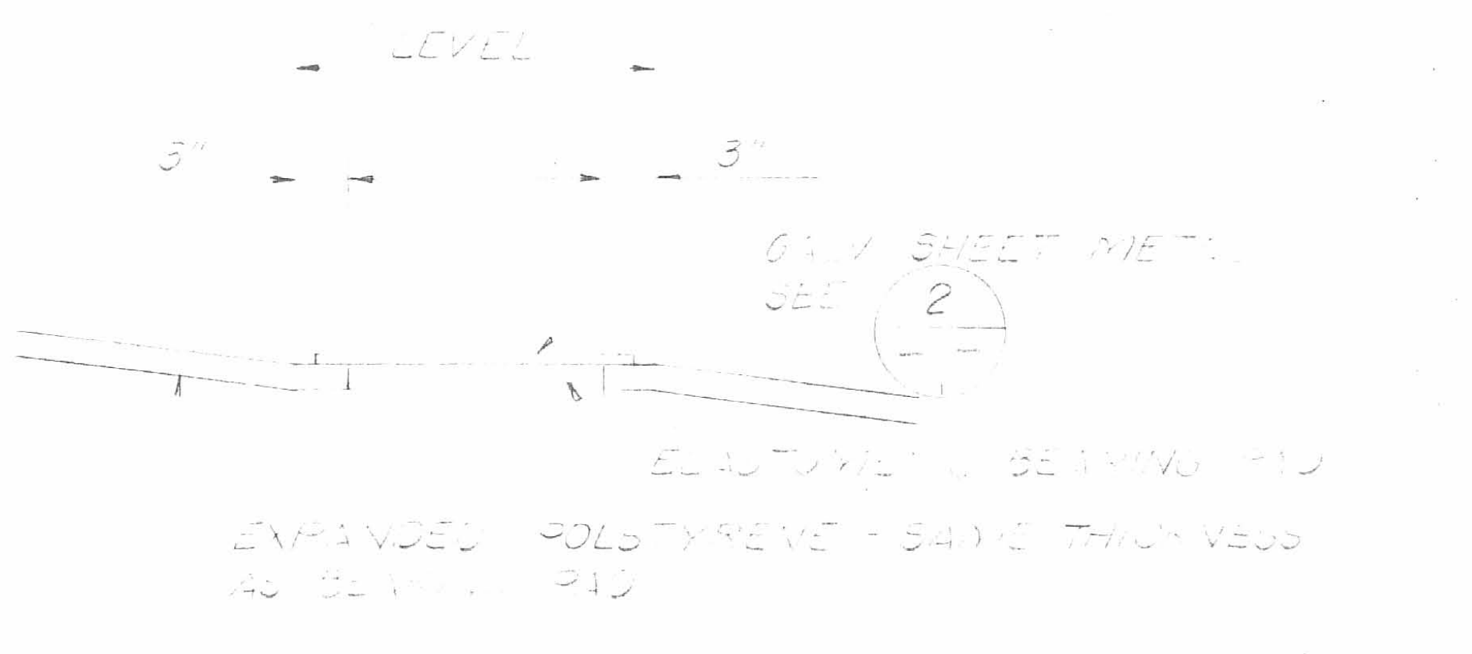
SUBMITTED:
DATE APPROVED
SCALE AS SHOWN
SPEC. No.
SHEET 35
FILE No.



ABUTMENT SECTION ½"=1'-0" 1 36|36

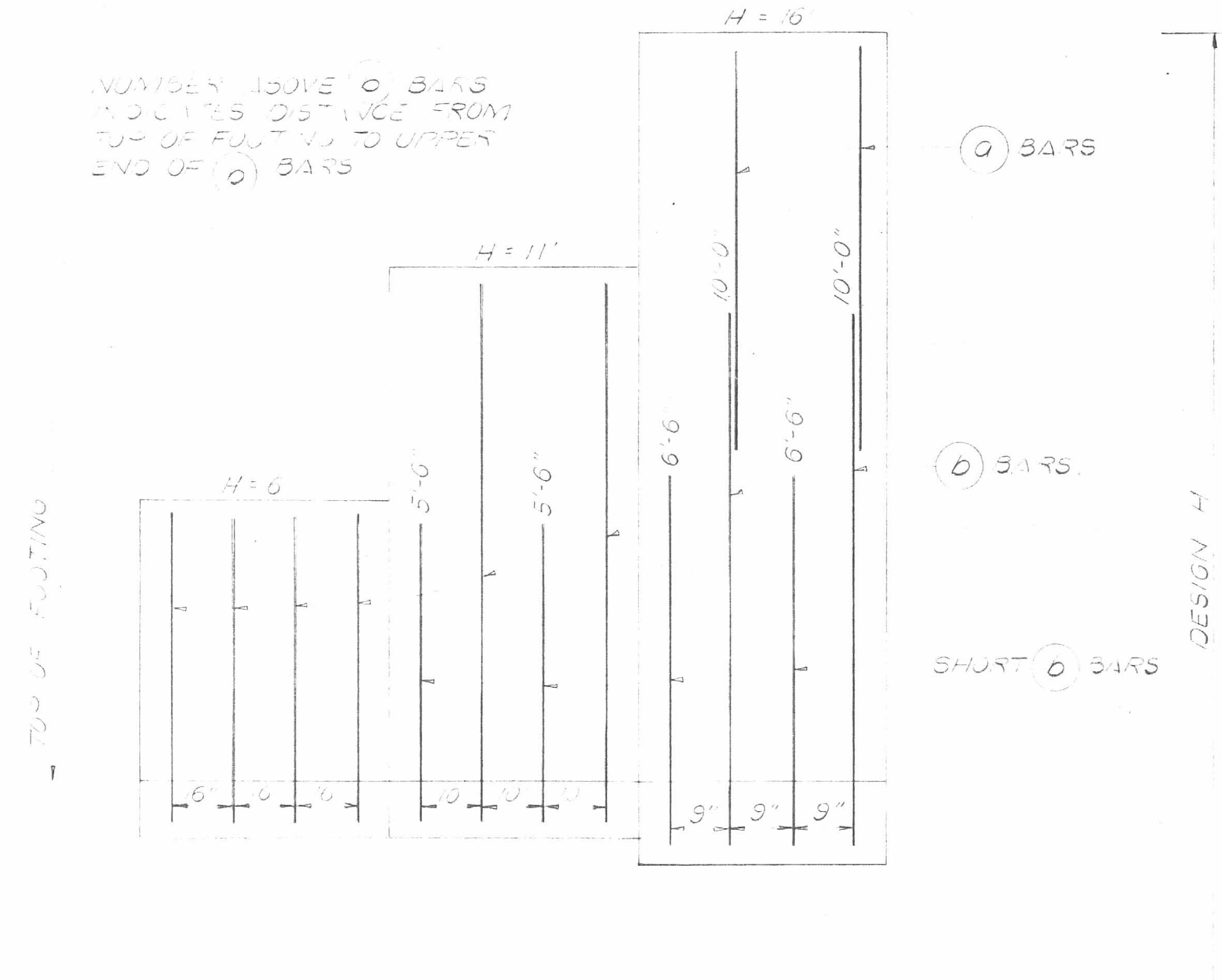

℄ ABUT. BEARING
JOINT SEAL
6
30-13 / 13-2
½" EXPANSION JOINT FILLER
.079" GALV. SHEET METAL COAT TOP OF PAD W/ GREASE
2" ALL AROUND BEARING PAD
¾" CHAMFER
EXPANDED POLYSTYRENE SAME THICKNESS AS BEARING PAD
LEVEL
3

PART ABUTMENT SECTION 1"=1'-0" 2 36|36

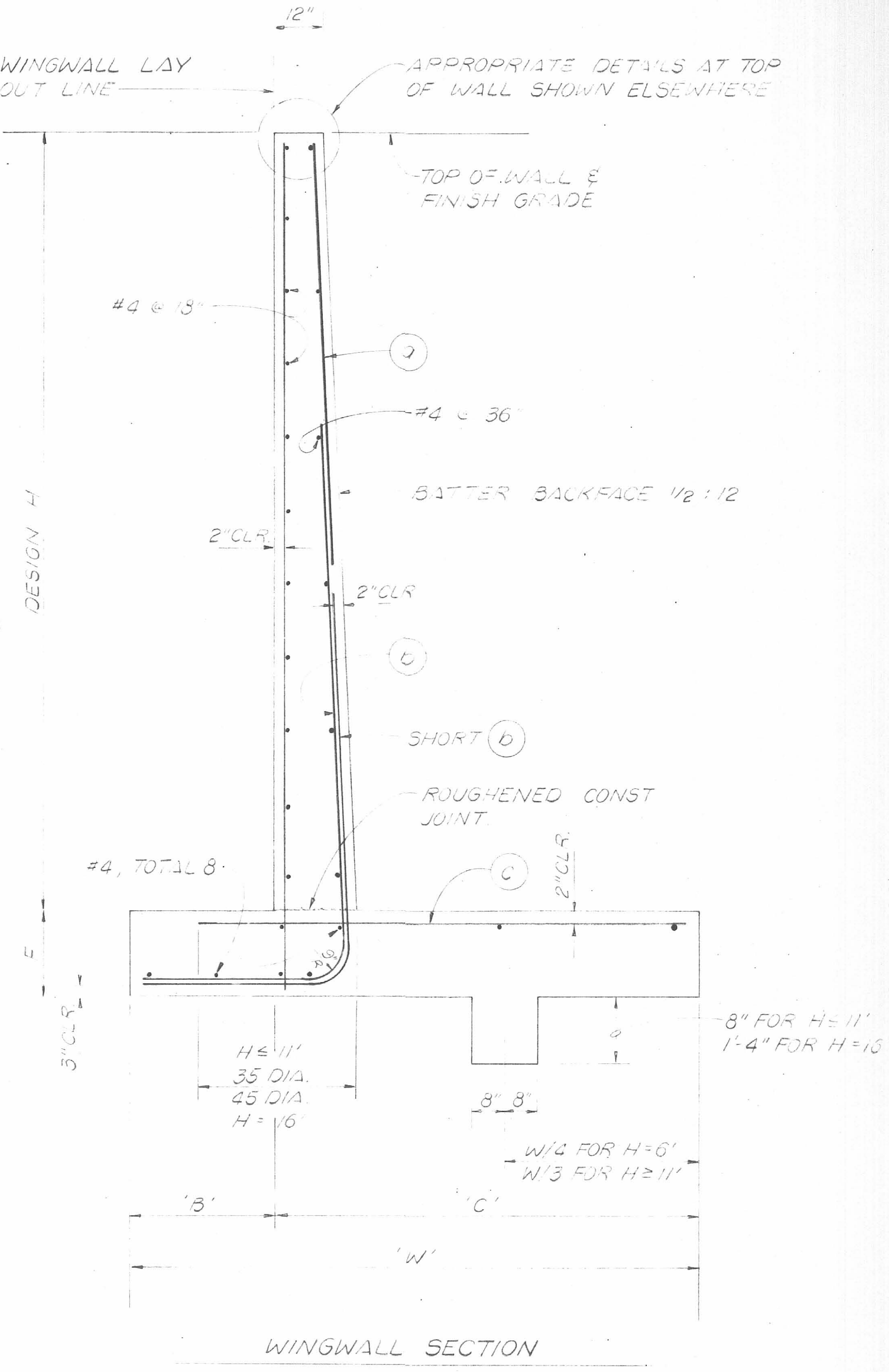


SECTION THRU BEARING PAD 3 36|36

NOTE: SEE CALTRAN STANDARD PLAN B3-8
FOR "APPROX. WALL OFFSET VALUES"
FOR WINGWALL STEM OFFSETS.



ELEVATION

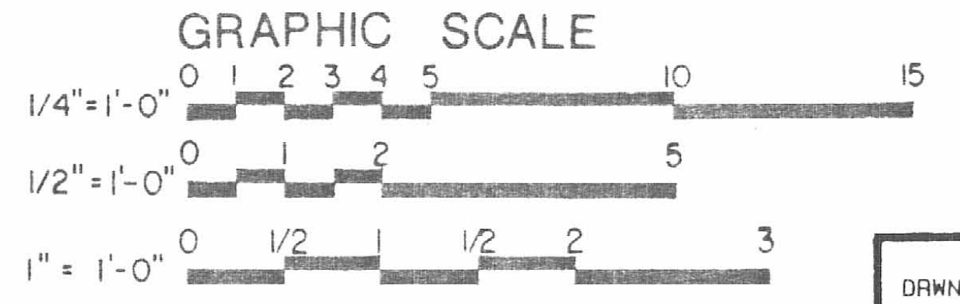

12"
WINGWALL LAY OUT LINE
APPROPRIATE DETAILS AT TOP OF WALL SHOWN ELSEWHERE
TOP OF WALL & FINISH GRADE
#4 @ 18"
(a)
#4 @ 36"
BATTER BACKFACE ½ : 12
2"CLR
2"CLR
DESIGN H
(b)
SHORT (b)
ROUGHENED CONST JOINT
#4, TOTAL 8
(c)
2"CLR
E
3"CLR
H ≤ 11' 35 DIA. 45 DIA. H = 16'
8"
8"
8" FOR H ≤ 11' 1'-4" FOR H = 16'
W/4 FOR H=6' W/3 FOR H ≥ 11'
'B'
'C'
'W'

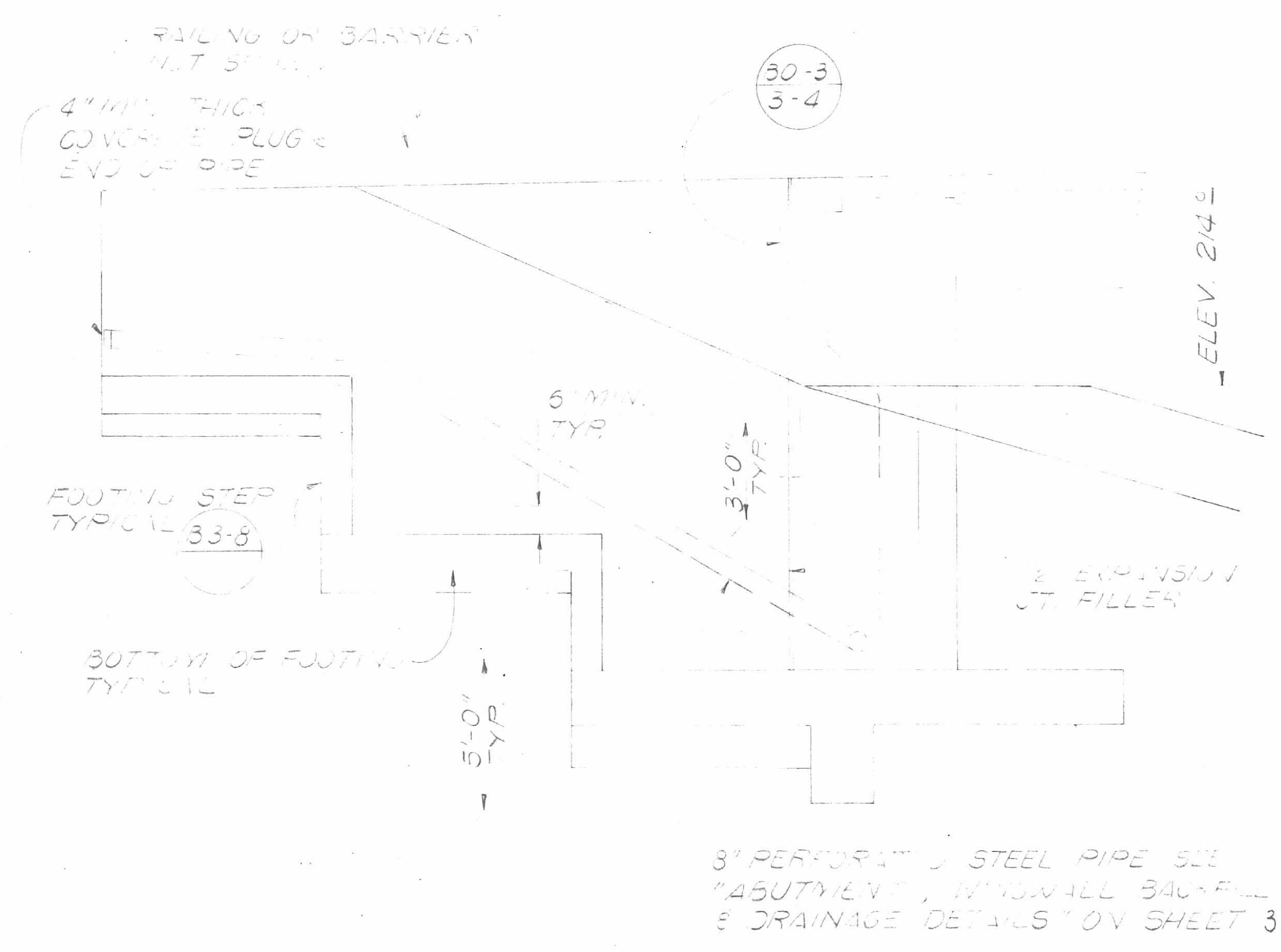
WINGWALL SECTION

NOT TO SCALE 4 36|36

TABLE OF REINFORCING STEEL & DIMENSIONS			
DESIGN H	6'-0"	11'-0	16'-0
W	4'-7"	7'-2"	11'-8
B	[illegible]	2'-0	3'-0"
C	3'-5"	5'-2"	8'-8"
E	1'-2"	1'-2"	1'-9"
a BARS	—	—	#6 @ 18
b BARS	#6 [illegible]	#6 @ 10"	#9 @ 9"
c BARS	#6 [illegible]	#5 @ 10"	#7 @ 9"

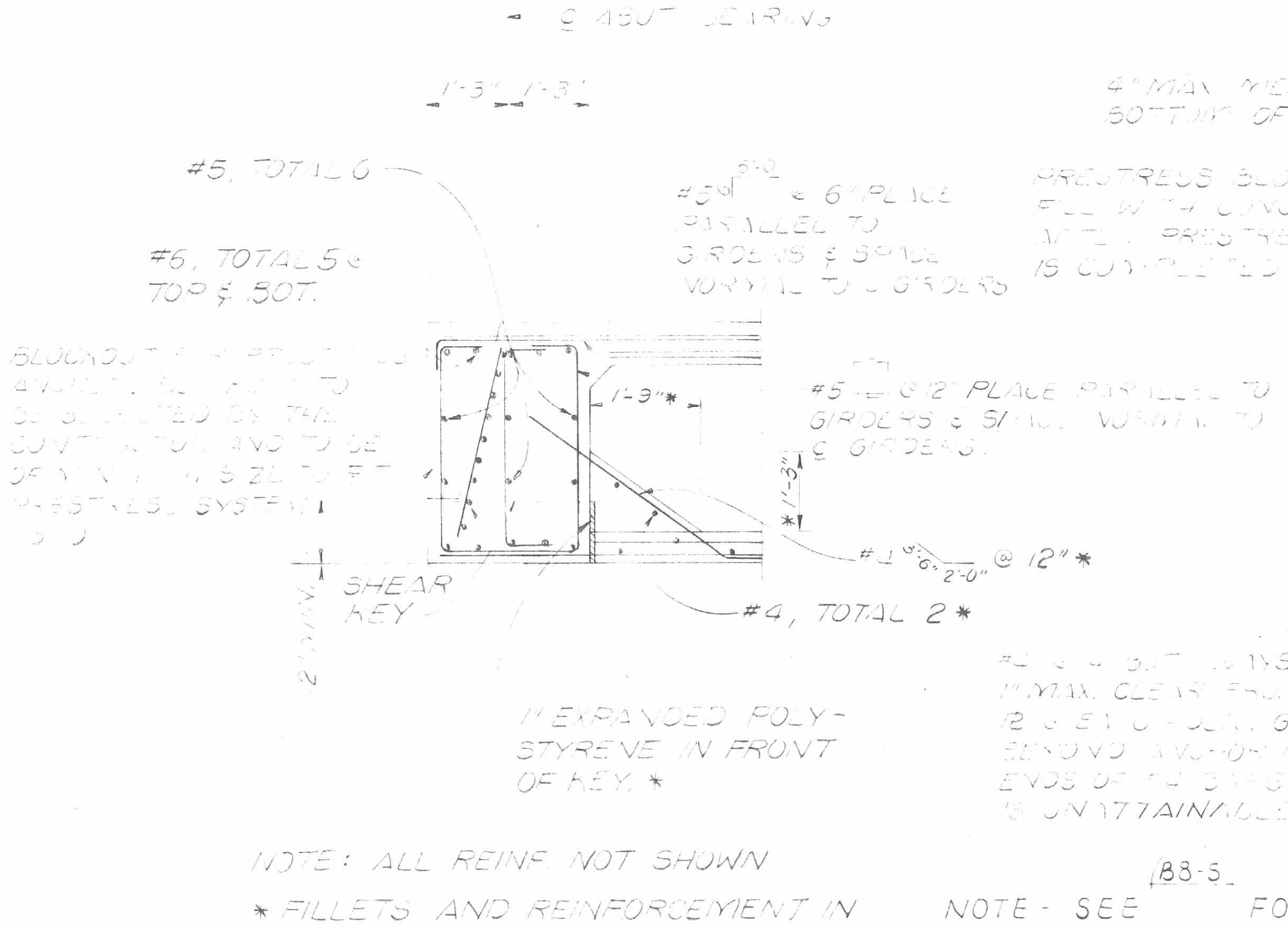
WINGWALL SECTION & DETAILS




℄ ABUT. BEARING
RAILING OR BARRIER NOT SHOWN
30-3 / 3-4
4" MIN. THICK CONCRETE PLUG @ END OF PIPE
ELEV. 214.0
5' MIN. TYP.
3'-0" TYP.
FOOTING STEP TYPICAL 33-8
BOTTOM OF FOOTING TYPICAL
5'-0" TYP.
½" EXPANSION JT. FILLER

8" PERFORATED STEEL PIPE SEE "ABUTMENT, WINGWALL BACKFILL & DRAINAGE DETAILS" ON SHEET 33.

TYPICAL WINGWALL ELEVATION ¼"=1'-0" 5 36


℄ ABUT. BEARING
1'-3"
1'-3"
#5, TOTAL 6
#6, TOTAL 5 @ TOP & BOT.
#5 @ 6" PLACE PARALLEL TO GIRDERS & SPACE NORMAL TO ℄ GIRDERS
BLOCKOUT FOR PRESTRESSING ANCHORAGE TO BE SELECTED BY THE CONTRACTOR AND TO BE OF SUFFICIENT SIZE TO FIT PRESTRESSING SYSTEM USED
1'-9" *
#5 @ 12" PLACE PARALLEL TO GIRDERS & SPACE NORMAL TO ℄ GIRDERS
1'-3" *
#4 @ 12" *
2'-0"
#4, TOTAL 2 *
SHEAR KEY
2" MAX.
1" EXPANDED POLYSTYRENE IN FRONT OF KEY. *

NOTE: ALL REINF. NOT SHOWN

* FILLETS AND REINFORCEMENT IN BAYS WITH SHEAR KEY.

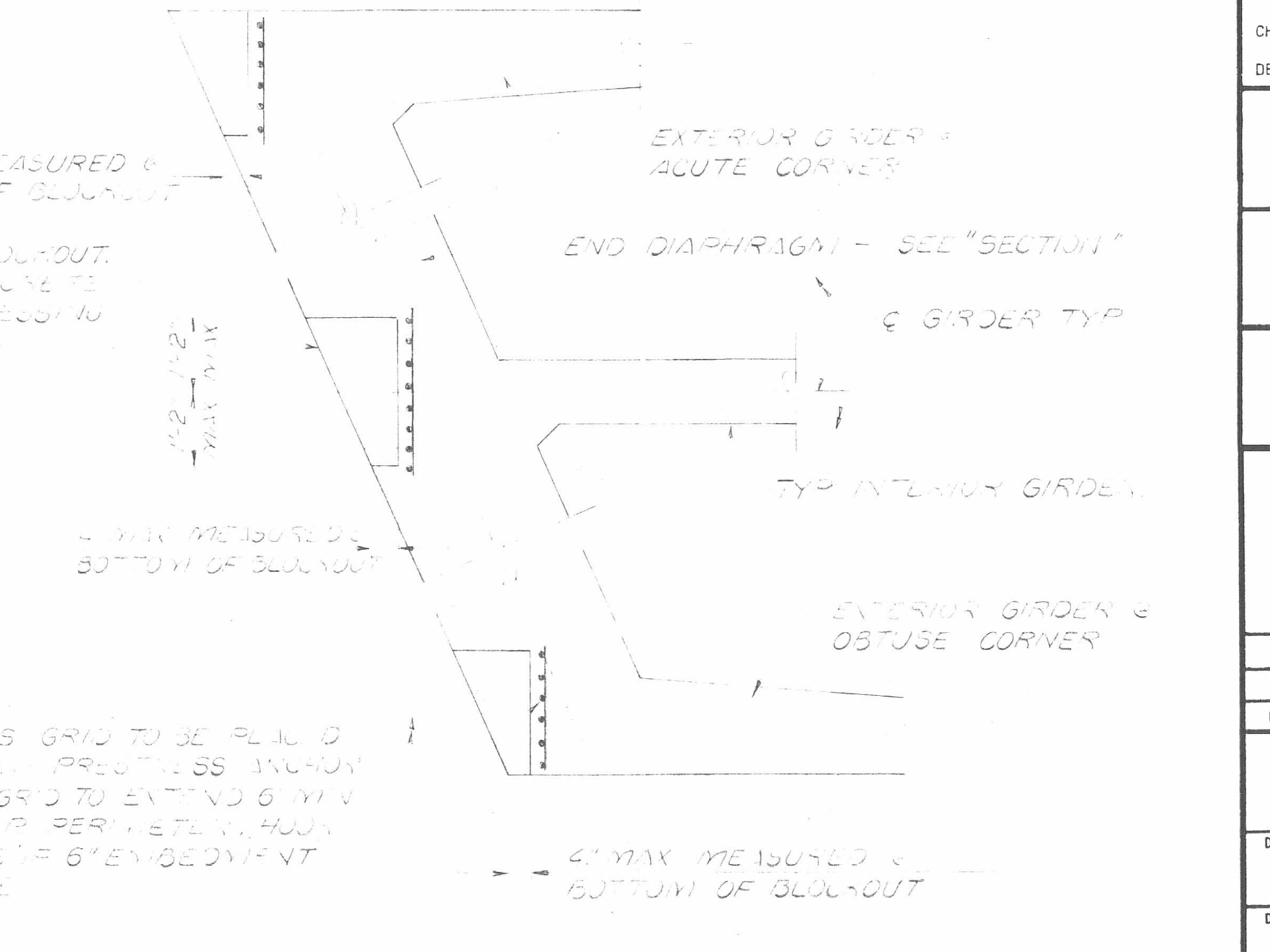
SECTION

END DIAPHRAGM

PRESTRESS BLOCKOUT. FILL WITH CONCRETE AFTER PRESTRESSING IS COMPLETED

#4 @ 4 BOTH WAYS GRID TO BE PLACED 1" MAX. CLEAR FROM PRESTRESS ANCHOR @ END OF BLOCKOUT. GRID TO EXTEND 6" MIN BEYOND ANCHOR PERIMETER. HOOK ENDS OF #4 BARS IF 6" EMBEDMENT IS UNATTAINABLE

NOTE - SEE B8-5 FOR DETAILS AND REINF. NOT SHOWN OR NOTED.


℄ ABUT BEARING
4" MAX. MEASURED @ BOTTOM OF BLOCKOUT
EXTERIOR GIRDER @ ACUTE CORNER
END DIAPHRAGM - SEE "SECTION"
℄ GIRDER TYP
1'-2"
1'-2"
MAX.
TYP INTERIOR GIRDER
4" MAX. MEASURED @ BOTTOM OF BLOCKOUT
EXTERIOR GIRDER @ OBTUSE CORNER
4" MAX. MEASURED @ BOTTOM OF BLOCKOUT

PLAN

½"=1'-0" 6 36|36

ENVIRONMENTAL
ENHANCEMENT
THRU ENGINEERING

DRWN.:
CHKD.:
DEPT.:

R+G RUTH AND GOING, INC.
Structural Engineering
2160 Lundy Ave San Jose, CA 95131-1832 (408) 943-1640

JOB. #

Roger L. Redig
ROGER L. REDIG S.E. 1431 EXP. 3-31-89
3-28-88
DATE:

Santa Clara Valley Water District

ACCEPTED BY DISTRICT: DATE 5/25/88

PROJECT ENGINEER R.C.E. NO 25413
Bruce Wilson
DIVISION ENGINEER R.C.E. NO 18827

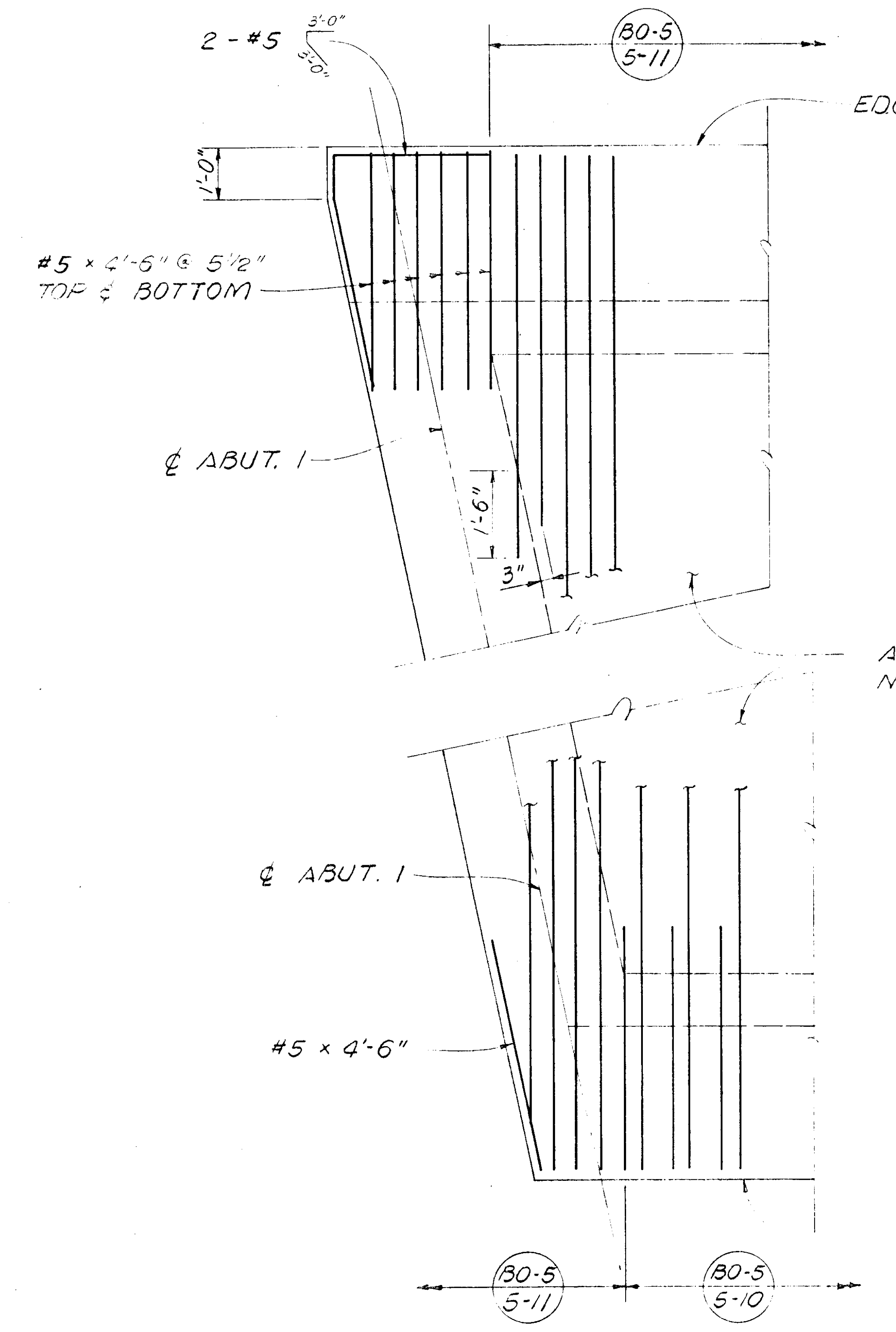
REVISION	DATE	DESCRIPTION	BY	BY
△				
△				

DESIGNED:
DRAWN:
CHECKED:
SUBMITTED:

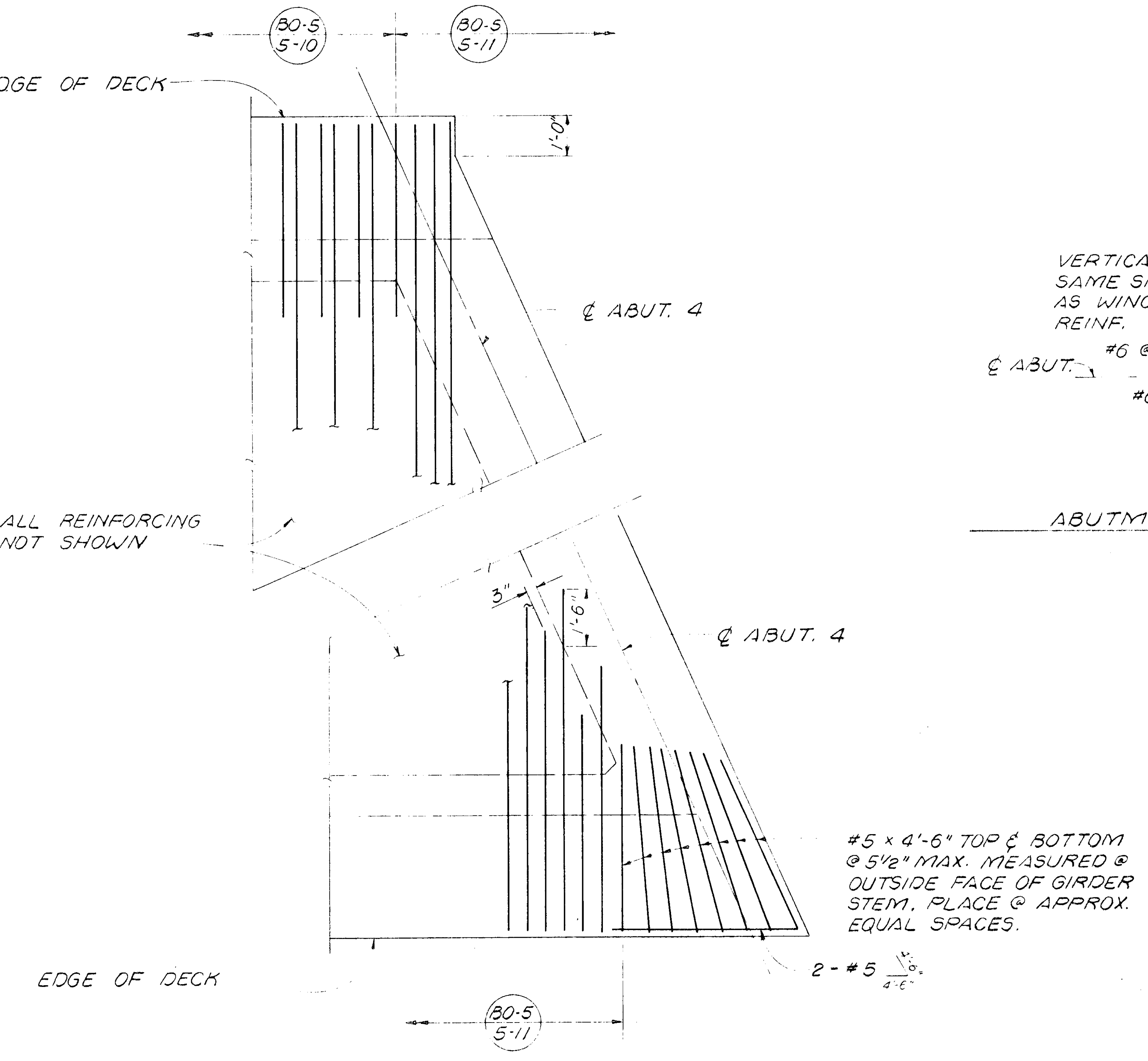
ABUTMENT AND WINGWALL DETAILS
THOMAS ROAD AT UVAS CREEK

DATE APPROVED
SCALE AS SHOWN
SPEC. No.
SHEET 36
FILE No.

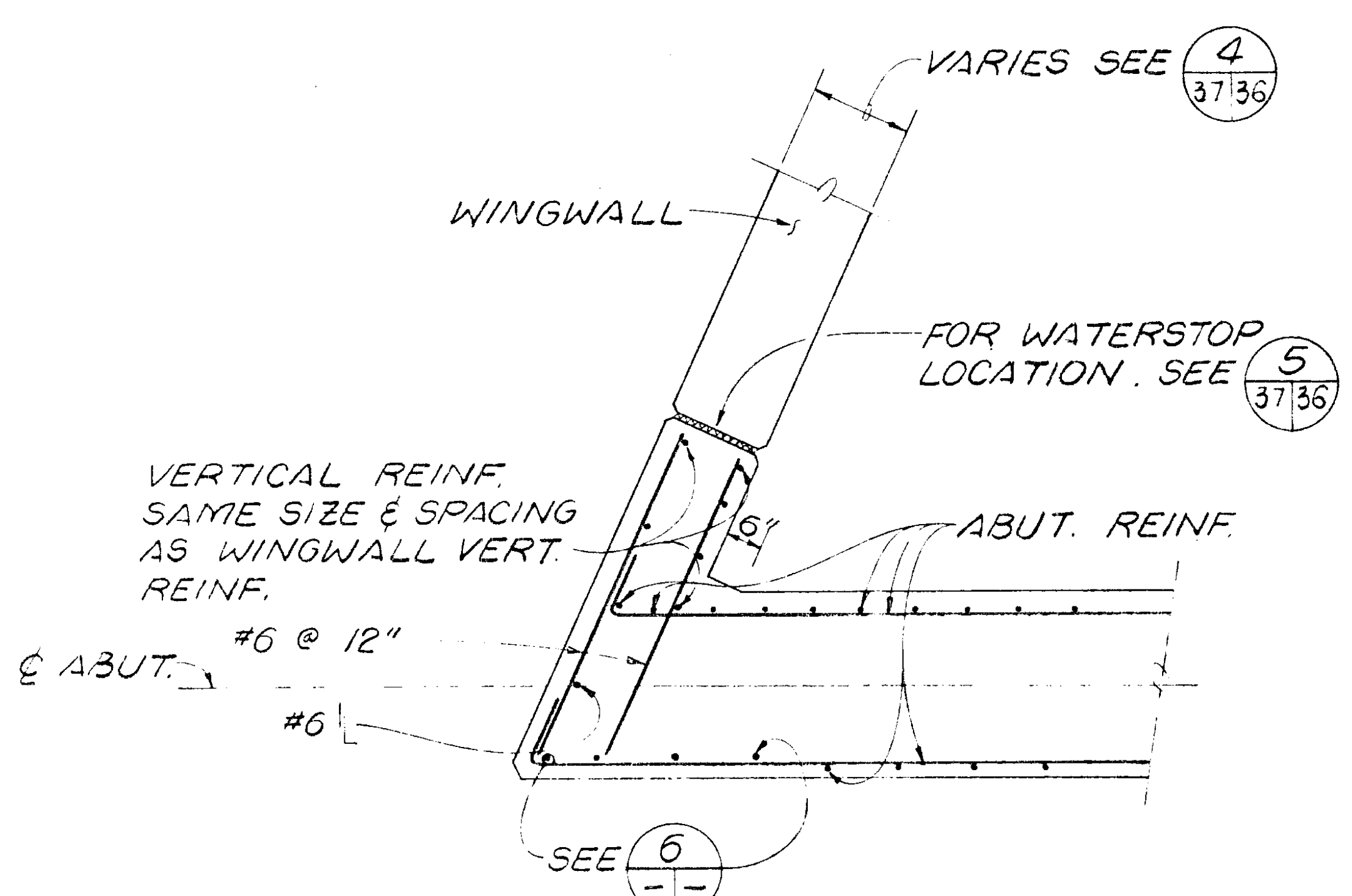
SANTA CLARA_CA Work Maps
SANTA CLARA_CA0266



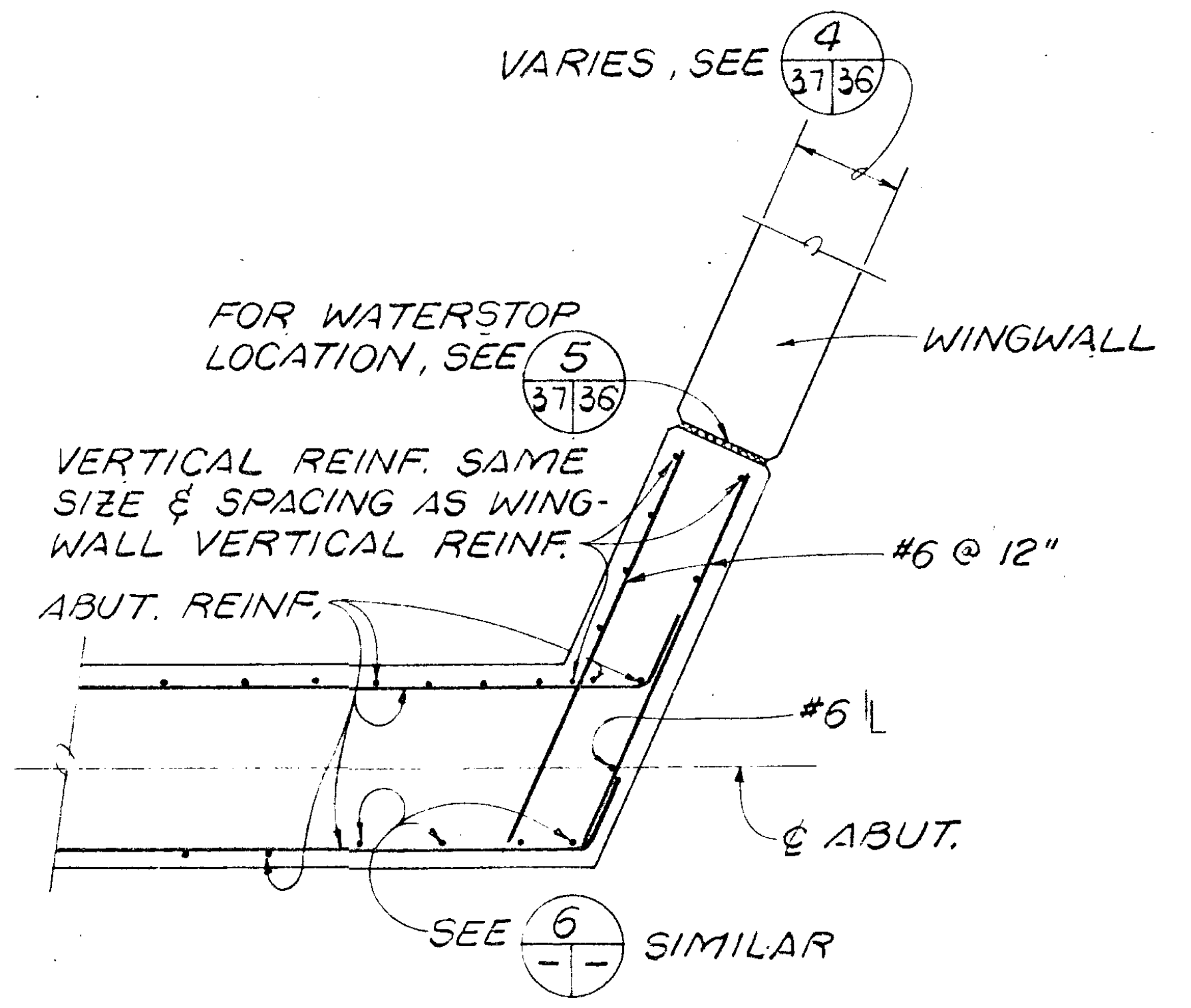
DECK CORNER PLAN (ABUTMENT 1) ½" = 1'-0" 1 / 40 37


80-5 / 5-10
80-5 / 5-11
1'-0"
℄ ABUT. 4
3"
1'-6"
℄ ABUT. 4
#5 × 4'-6" TOP & BOTTOM @ 5½" MAX. MEASURED @ OUTSIDE FACE OF GIRDER STEM, PLACE @ APPROX. EQUAL SPACES.
2 - #5
EDGE OF DECK
80-5 / 5-11

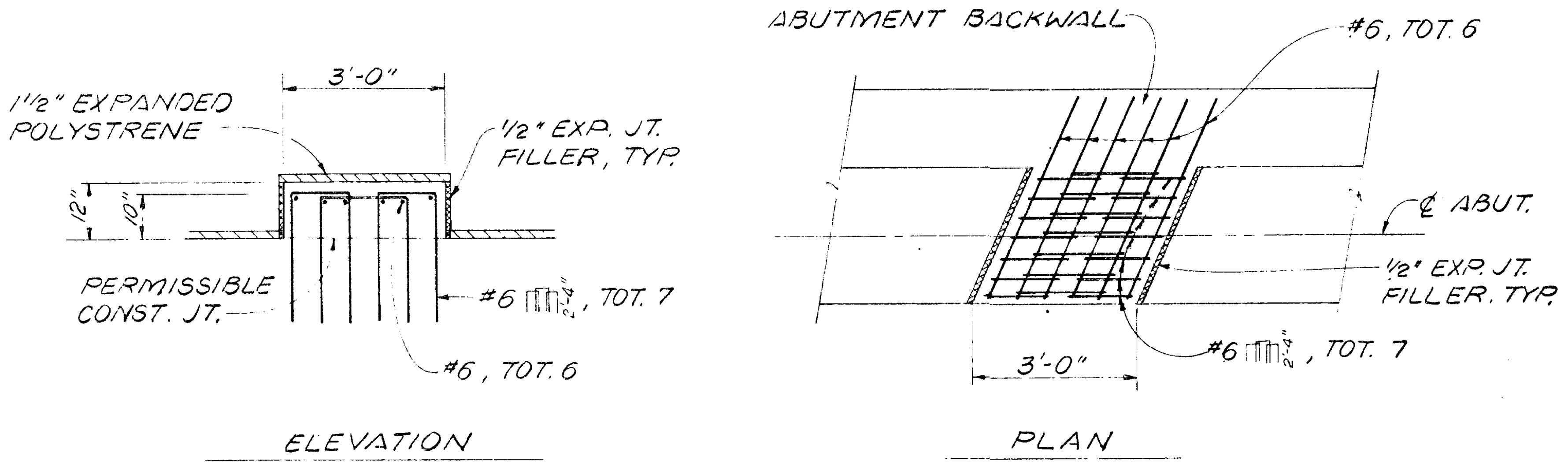
DECK CORNER PLAN (ABUTMENT 4) ½" = 1'-0" 2 / 40 37


VARIES SEE 4 / 37 36
WINGWALL
FOR WATERSTOP LOCATION. SEE 5 / 37 36
VERTICAL REINF. SAME SIZE & SPACING AS WINGWALL VERT. REINF.
ABUT. REINF.
℄ ABUT.
#6 @ 12"
#6
SEE 6

ABUTMENT CORNER ½" = 1'-0" 3 / 34,35 37


VARIES, SEE 4 / 37 36
WINGWALL
FOR WATERSTOP LOCATION, SEE 5 / 37 36
VERTICAL REINF. SAME SIZE & SPACING AS WINGWALL VERTICAL REINF.
#6 @ 12"
ABUT. REINF.
#6
℄ ABUT.
SEE 6 SIMILAR

ABUTMENT CORNER ½" = 1'-0" 4 / 34,35 37

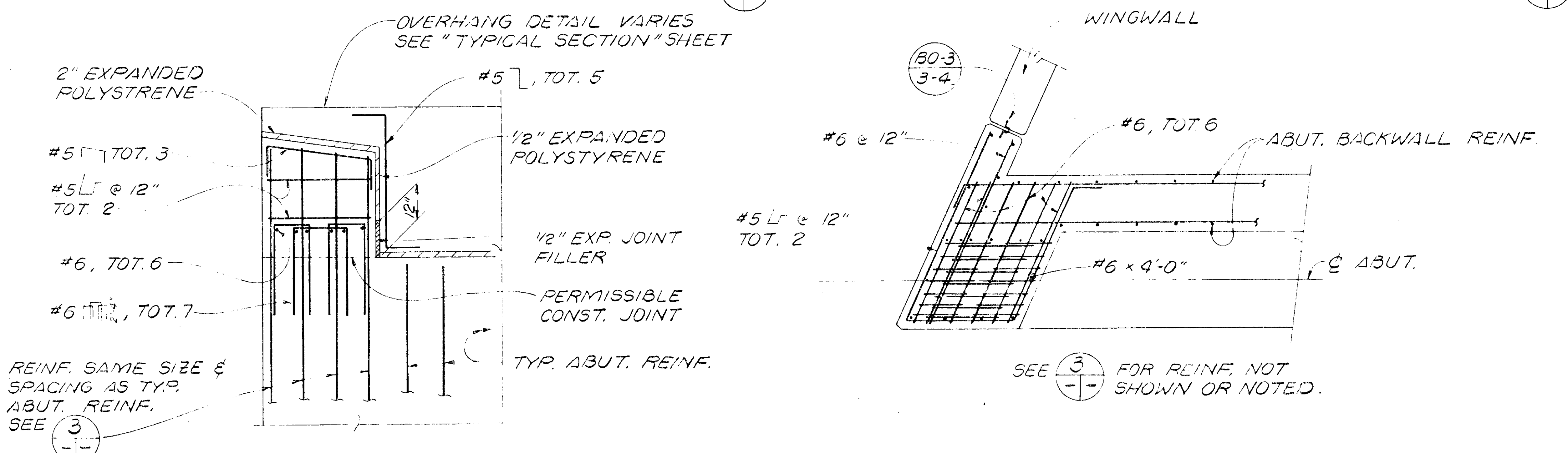


ELEVATION

PLAN

NOTE: KEY SHALL BE CONSTRUCTED PARALLEL TO ℄ GIRDER.

INTERIOR SHEAR KEY ½" = 1'-0" 5 / 34,35 37

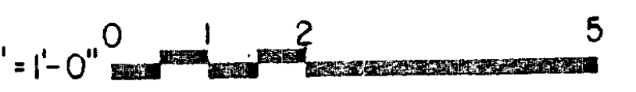


ELEVATION

PLAN

EXTERIOR SHEAR KEY ½" = 1'-0" 6 / 34,35 37

GRAPHIC SCALE



ENVIRONMENTAL ENHANCEMENT THRU ENGINEERING

DRWN.: JCD
CHKD.: KWC
DEPT.: STRUCT.

R+G RUTH AND GOING, INC.
Structural Engineering
2160 Lundy Ave San Jose, CA 95131-1832 (408) 943-1640

JOB # 17273

Roger L. Redig
ROGER L. REDIG S.E. 1431 EXP. 3-31-89

3-28-88
DATE:

Santa Clara Valley Water District

ACCEPTED BY DISTRICT: DATE 5/25/88

PROJECT ENGINEER RCE NO 25413
Bruce Wilson
DIVISION ENGINEER RCE NO 15851

REVISION	DATE	DESCRIPTION	BY	BY

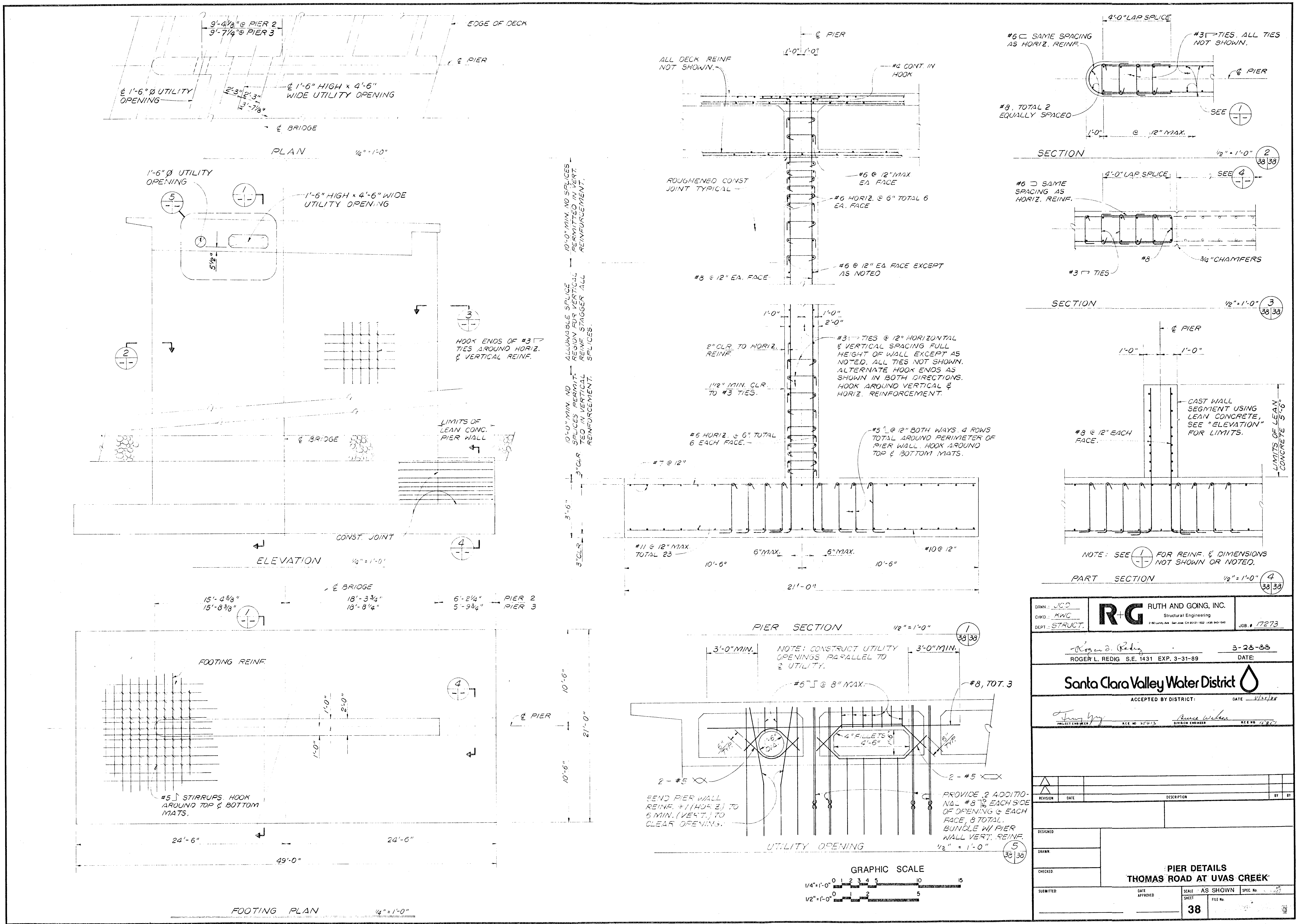
DESIGNED
DRAWN
CHECKED
SUBMITTED
DATE APPROVED

SHEAR KEY AND DECK DETAILS
THOMAS ROAD AT UVAS CREEK

SCALE AS SHOWN
SPEC. No
SHEET 37
FILE No.

SANTA CLARA_CA Work Maps
SANTA CLARA_CA0267

ENVIRONMENTAL ENHANCEMENT THRU ENGINEERING


9'-4 1/8" @ PIER 2
9'-7 1/4" @ PIER 3
EDGE OF DECK
℄ PIER
℄ 1'-6" Ø UTILITY OPENING
2'-3"
2'-3"
3'-7 1/8"
℄ 1'-6" HIGH × 4'-6" WIDE UTILITY OPENING
℄ BRIDGE
PLAN 1/4" = 1'-0"
1'-6" Ø UTILITY OPENING
1'-6" HIGH × 4'-6" WIDE UTILITY OPENING
5 1/2"
HOOK ENDS OF #3 TIES AROUND HORIZ. & VERTICAL REINF.
℄ BRIDGE
LIMITS OF LEAN CONC. PIER WALL
CONST. JOINT
ELEVATION 1/4" = 1'-0"
10'-0" MIN. NO SPLICES PERMITTED IN VERT. REINFORCEMENT.
ALLOWABLE SPLICE REGION FOR VERTICAL REINF. STAGGER ALL SPLICES.
10'-0" MIN. NO SPLICES PERMITTED IN VERTICAL REINFORCEMENT.
3" CLR
3'-6"
3" CLR
℄ PIER
1'-0" 1'-0"
ALL DECK REINF NOT SHOWN.
#4 CONT. IN HOOK
ROUGHENED CONST JOINT TYPICAL
#6 @ 12" MAX EA FACE
#6 HORIZ. @ 6" TOTAL 6 EA. FACE
#6 @ 12" EA FACE EXCEPT AS NOTED
#8 @ 12" EA. FACE
1'-0"
1'-0"
2'-0"
2" CLR. TO HORIZ. REINF.
1 1/2" MIN. CLR. TO #3 TIES.
#3 TIES @ 12" HORIZONTAL & VERTICAL SPACING FULL HEIGHT OF WALL EXCEPT AS NOTED. ALL TIES NOT SHOWN. ALTERNATE HOOK ENDS AS SHOWN IN BOTH DIRECTIONS. HOOK AROUND VERTICAL & HORIZ. REINFORCEMENT.
#5 HORIZ. @ 6" TOTAL 6 EACH FACE.
#5 @ 12" BOTH WAYS. 4 ROWS TOTAL AROUND PERIMETER OF PIER WALL. HOOK AROUND TOP & BOTTOM MATS.
#7 @ 12"
#11 @ 12" MAX TOTAL 23
6" MAX.
6" MAX.
#10 @ 12"
10'-6"
10'-6"
21'-0"
PIER SECTION 1/2" = 1'-0"
4'-0" LAP SPLICE
#6 SAME SPACING AS HORIZ. REINF.
#3 TIES. ALL TIES NOT SHOWN.
℄ PIER
#8, TOTAL 2 EQUALLY SPACED
SEE
1'-0"
@ 12" MAX.
SECTION 1/2" = 1'-0"
4'-0" LAP SPLICE
SEE
#6 SAME SPACING AS HORIZ. REINF.
#8
3/4" CHAMFERS
#3 TIES
SECTION 1/2" = 1'-0"
℄ PIER
1'-0"
1'-0"
CAST WALL SEGMENT USING LEAN CONCRETE, SEE "ELEVATION" FOR LIMITS.
#8 @ 12" EACH FACE.
LIMITS OF LEAN CONCRETE 5'-6"
NOTE: SEE FOR REINF. & DIMENSIONS NOT SHOWN OR NOTED.
PART SECTION 1/2" = 1'-0"
℄ BRIDGE
15'-4 5/8"
15'-8 3/8"
18'-3 3/4"
18'-8 1/4"
6'-2 1/4"
5'-9 3/4"
PIER 2
PIER 3
FOOTING REINF.
℄ PIER
1'-0"
2'-0"
1'-0"
10'-6"
21'-0"
10'-6"
#5 STIRRUPS. HOOK AROUND TOP & BOTTOM MATS.
24'-6"
24'-6"
49'-0"
FOOTING PLAN 1/4" = 1'-0"
3'-0" MIN.
NOTE: CONSTRUCT UTILITY OPENINGS PARALLEL TO ℄ UTILITY.
3'-0" MIN.
#6 @ 8" MAX.
#8, TOT. 3
6" TYP.
1'-6" DIA.
4" FILLETS
4'-6"
1'-6"
6" TYP.
2 - #5
2 - #5
BEND PIER WALL REINF. @ 1 (HOR'Z.) TO 6 MIN. (VERT.) TO CLEAR OPENING.
PROVIDE 2 ADDITIONAL #8 8'-0" EACH SIDE OF OPENING @ EACH FACE, 8 TOTAL. BUNDLE W/ PIER WALL VERT. REINF.
UTILITY OPENING 1/2" = 1'-0"
GRAPHIC SCALE
1/4" = 1'-0"
0 1 2 3 4 5 10 15
1/2" = 1'-0"
0 1 2 5
1
38 | 38
2
38 | 38
3
38 | 38
4
38 | 38
5
38 | 38

DRWN.: JCD
CHKD.: KWC
DEPT.: STRUCT.

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Structural Engineering
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JOB. # 17273

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ROGER L. REDIG S.E. 1431 EXP. 3-31-89
3-28-88
DATE:

Santa Clara Valley Water District

ACCEPTED BY DISTRICT: DATE 5/25/88

PROJECT ENGINEER RCE NO 25413
Bruce Wilson
DIVISION ENGINEER RCE NO 15851

REVISION	DATE	DESCRIPTION	BY	BY
△				
△				

DESIGNED:
DRAWN:
CHECKED:

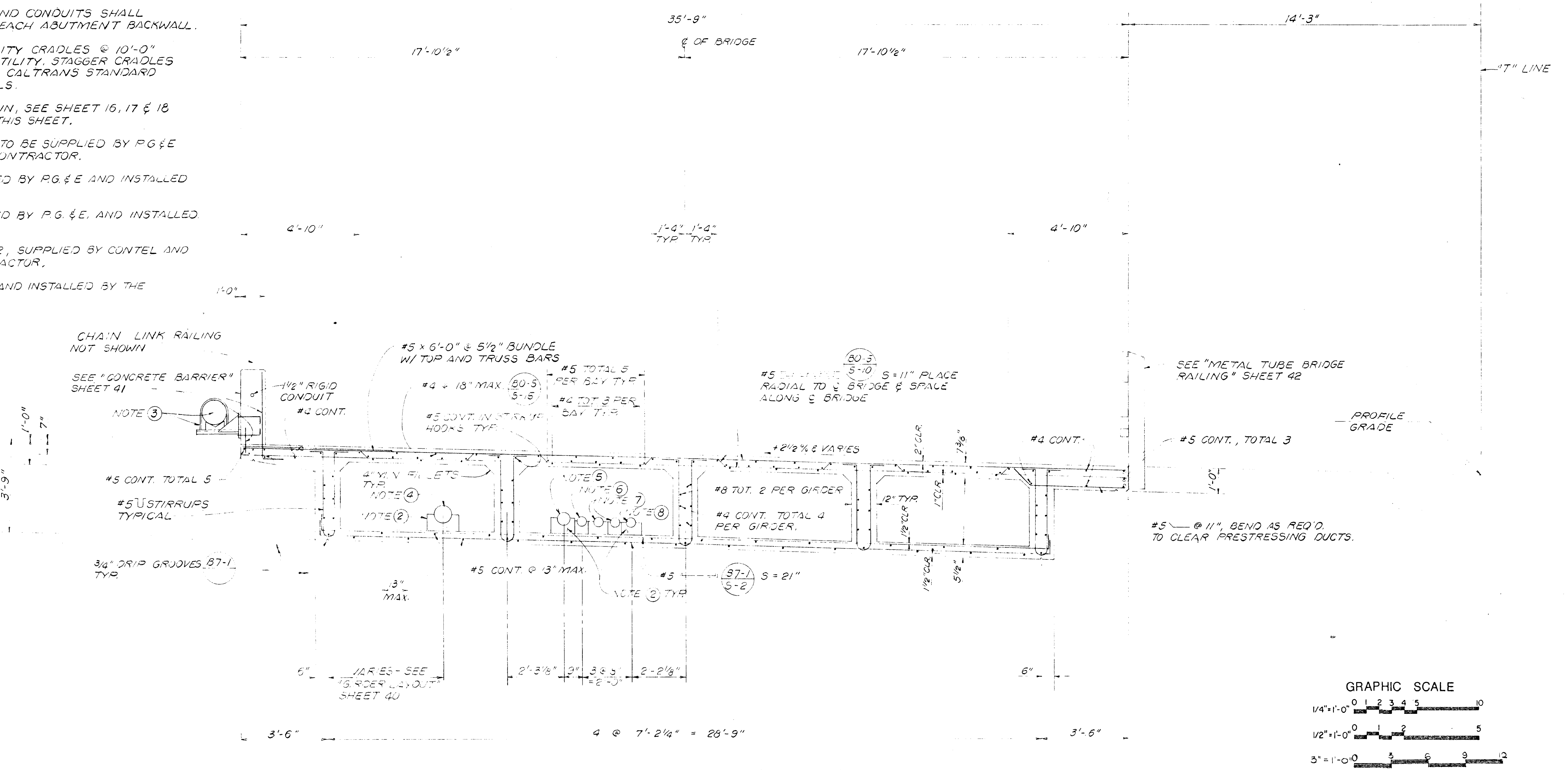
PIER DETAILS
THOMAS ROAD AT UVAS CREEK

SUBMITTED:
DATE APPROVED
SCALE AS SHOWN
SPEC. No.
SHEET 38
FILE No.

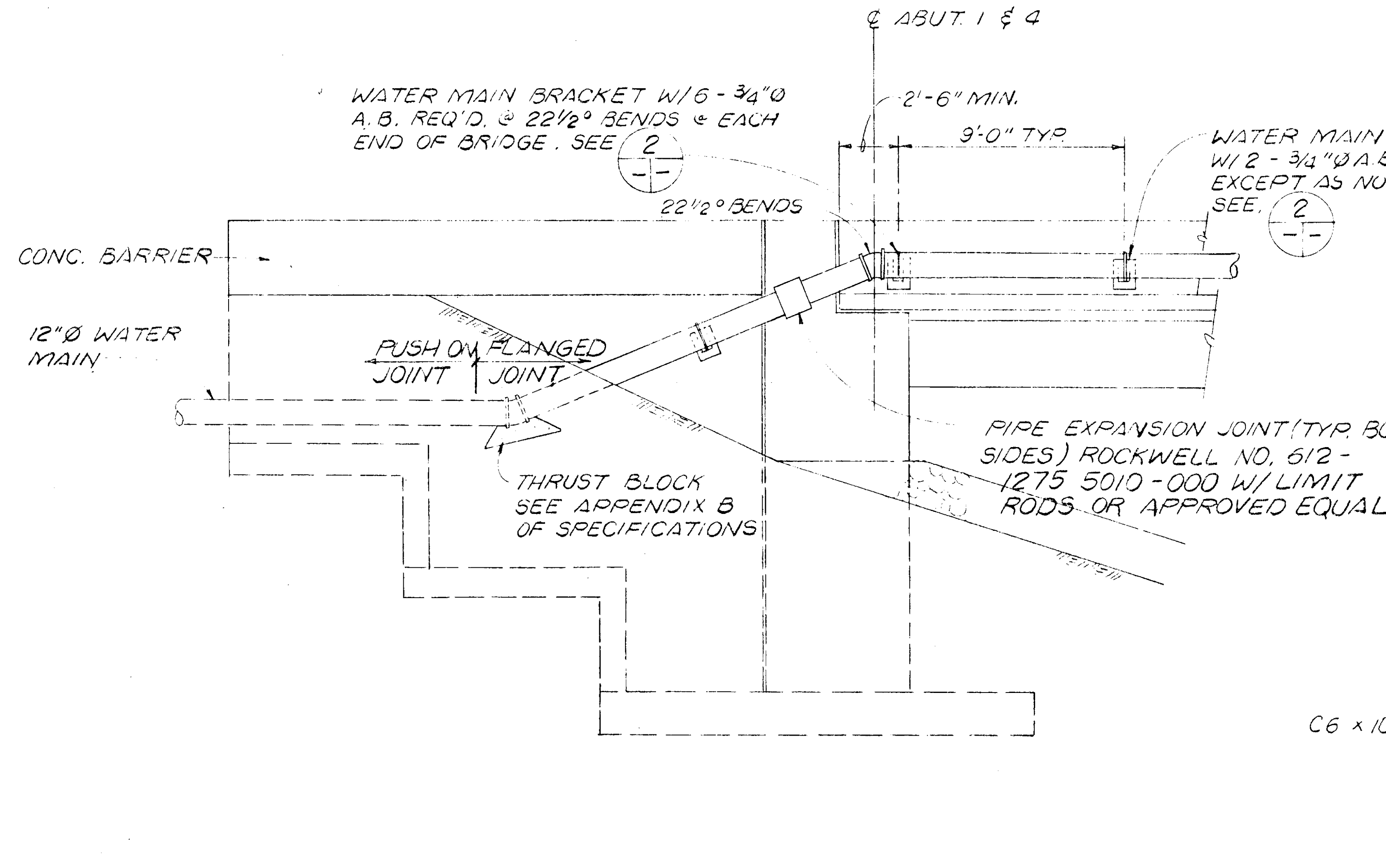
SANTA CLARA_CA Work Maps
SANTA CLARA_CA0268

NOTES:

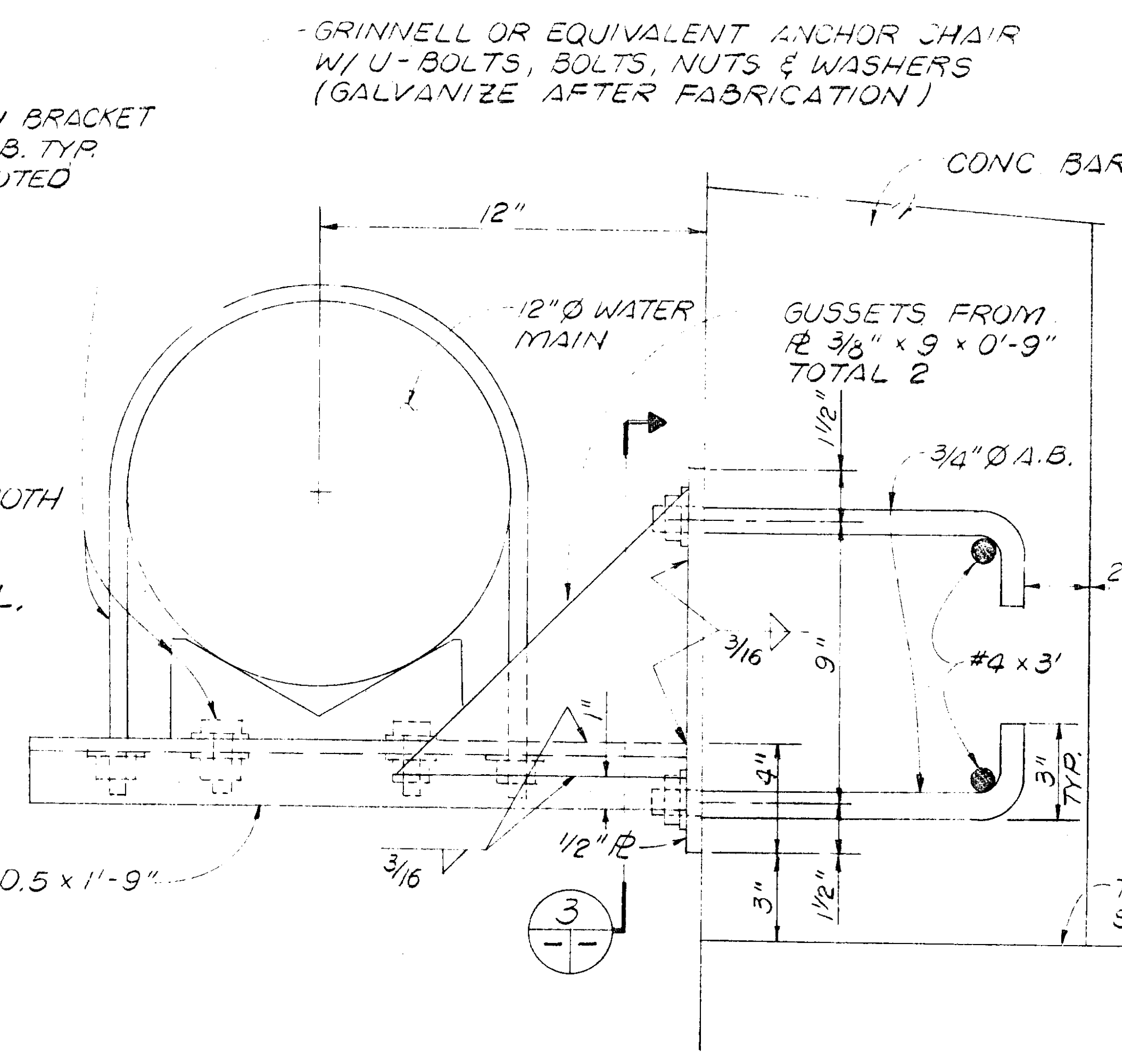
1. ALL CASINGS, SLEEVES AND CONDUITS SHALL EXTEND 2 FEET BEYOND EACH ABUTMENT BACKWALL.
2. PRECAST CONCRETE UTILITY CRADLES @ 10'-0" MAX. SPACING @ EACH UTILITY. STAGGER CRADLES @ ADJACET UTILITY. SEE CALTRANS STANDARD PLAN B14-4 FOR DETAILS.
3. 12" DIAMETER WATER MAIN, SEE SHEET 16, 17 & 18 AND DETAILS 1, 2 & 3 ON THIS SHEET.
4. 8" STEEL CASING FOR GAS TO BE SUPPLIED BY P.G.&E AND INSTALLED BY THE CONTRACTOR.
5. 6" STEEL CONDUIT SUPPLIED BY P.G.&E AND INSTALLED BY THE CONTRACTOR.
6. 4" STEEL CONDUIT SUPPLIED BY P.G.&E. AND INSTALLED BY THE CONTRACTOR.
7. 4" PVC SLEEVES, TOTAL 2, SUPPLIED BY CONTEL AND INSTALLED BY THE CONTRACTOR.
8. 4" PVC SLEEVE SUPPLIED AND INSTALLED BY THE CONTRACTOR.



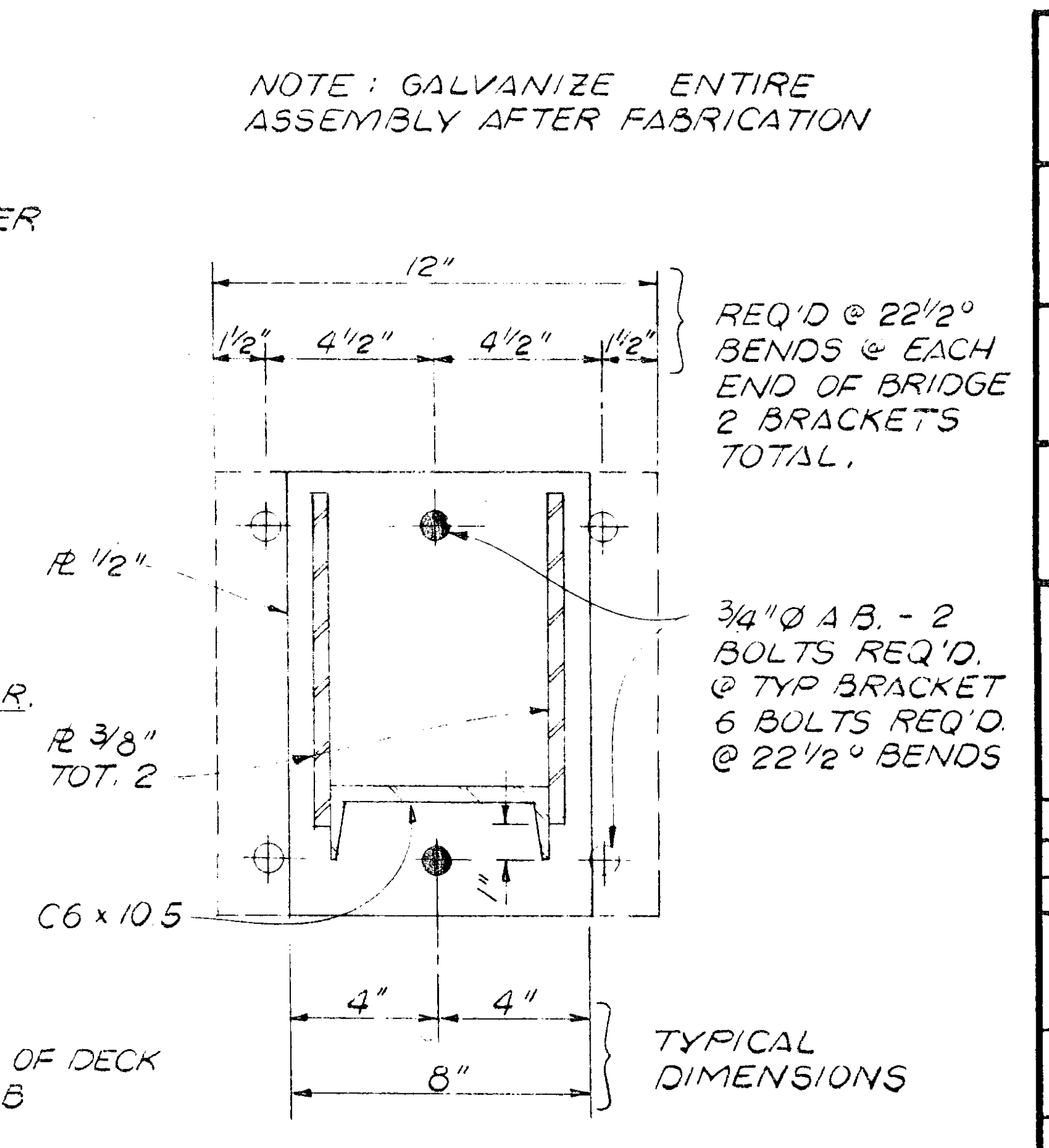
TYPICAL SECTION (80-5) (87-1) (88-5) (314-4) ½"=1'-0"


℄ ABUT. 1 & 4
WATER MAIN BRACKET W/6 - ¾"Ø A.B. REQ'D. @ 22½° BENDS & EACH END OF BRIDGE. SEE 2
2'-6" MIN.
9'-0" TYP.
WATER MAIN BRACKET W/ 2 - ¾"Ø A.B. TYP. EXCEPT AS NOTED SEE 2
22½° BENDS
CONC. BARRIER
12"Ø WATER MAIN
PUSH ON JOINT
FLANGED JOINT
THRUST BLOCK SEE APPENDIX B OF SPECIFICATIONS
PIPE EXPANSION JOINT (TYP. BOTH SIDES) ROCKWELL NO. 612-1275 5010-000 W/ LIMIT RODS OR APPROVED EQUAL.

ELEVATION OF WATER MAIN @ ABUTMENTS ¼" = 1'-0" (1 / 16, 39 | 39)


GRINNELL OR EQUIVALENT ANCHOR CHAIR W/ U-BOLTS, BOLTS, NUTS & WASHERS (GALVANIZE AFTER FABRICATION)
CONC BARRIER
12"
12"Ø WATER MAIN
GUSSETS FROM ℘ ⅜" × 9 × 0'-9" TOTAL 2
1½"
¾"Ø A.B.
2" CLR.
9"
#4 × 3'
3/16
1"
4"
3" TYP.
½" ℘
3/16
3"
1½"
3
C6 × 10.5 × 1'-9"
TOP OF DECK SLAB

WATER MAIN BRACKET 3" = 1'-0" (2 / 39 | 39)


NOTE: GALVANIZE ENTIRE ASSEMBLY AFTER FABRICATION
12"
1½" 4½" 4½" 1½"
REQ'D @ 22½° BENDS & EACH END OF BRIDGE 2 BRACKETS TOTAL.
℘ ½"
℘ ⅜" TOT. 2
¾"Ø A.B. - 2 BOLTS REQ'D. @ TYP BRACKET 6 BOLTS REQ'D. @ 22½° BENDS
C6 × 10.5
1"
4" 4"
8"
TYPICAL DIMENSIONS

SECTION 3"=1'-0" (3 / 39 | 39)

DRWN.: JCD
CHKD.: KWC
DEPT.: STRUCT.

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JOB.# 17273

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ROGER L. REDIG S.E. 1431 EXP. 3-31-89
3-28-88
DATE:

Santa Clara Valley Water District

ACCEPTED BY DISTRICT: DATE 5/25/88
PROJECT ENGINEER RCE NO 25413
Bruce Wilson
DIVISION ENGINEER RCE NO 15851

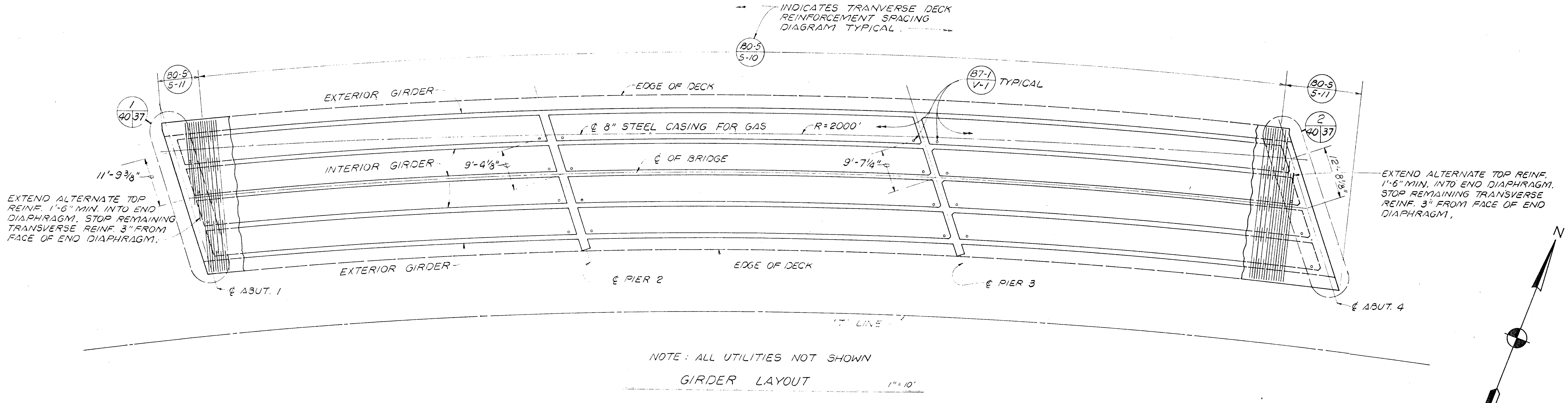
REVISION	DATE	DESCRIPTION	BY	BY
△				
△				

DESIGNED:
DRAWN:
CHECKED:
SUBMITTED
DATE APPROVED

TYPICAL SECTION
THOMAS ROAD AT UVAS CREEK

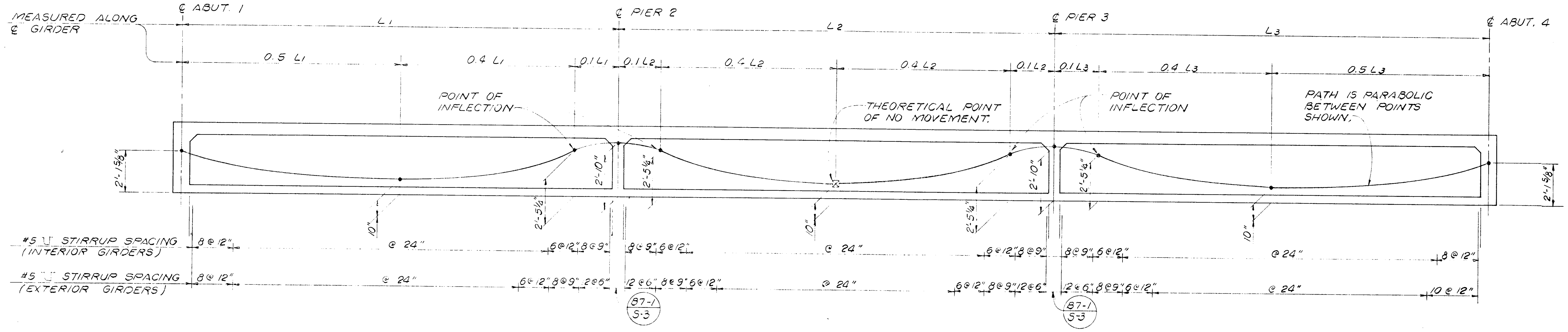
SCALE AS SHOWN
SPEC. No.
SHEET 39
FILE No.

ENVIRONMENTAL ENHANCEMENT THRU ENGINEERING


INDICATES TRANVERSE DECK REINFORCEMENT SPACING DIAGRAM TYPICAL.
80-5 / 5-10
80-5 / 5-11
1 / 40 37
EXTERIOR GIRDER
EDGE OF DECK
87-1 / V-1 TYPICAL
80-5 / 5-11
2 / 40 37
¢ 8" STEEL CASING FOR GAS
R=2000'
INTERIOR GIRDER
9'-4 1/8"
¢ OF BRIDGE
9'-7 1/4"
11'-9 3/8"
12'-8 1/8"
EXTEND ALTERNATE TOP REINF. 1'-6" MIN. INTO END DIAPHRAGM. STOP REMAINING TRANSVERSE REINF. 3" FROM FACE OF END DIAPHRAGM.
EXTEND ALTERNATE TOP REINF. 1'-6" MIN. INTO END DIAPHRAGM. STOP REMAINING TRANSVERSE REINF. 3" FROM FACE OF END DIAPHRAGM.
EXTERIOR GIRDER
EDGE OF DECK
¢ ABUT. 1
¢ PIER 2
¢ PIER 3
¢ ABUT. 4
"T" LINE
N

NOTE: ALL UTILITIES NOT SHOWN

GIRDER LAYOUT 1"=10'



LONGITUDINAL SECTION NOT TO SCALE

GRAPHIC SCALE

1" = 10' 0 2 4 6 8 10 20

PRESTRESSING NOTES

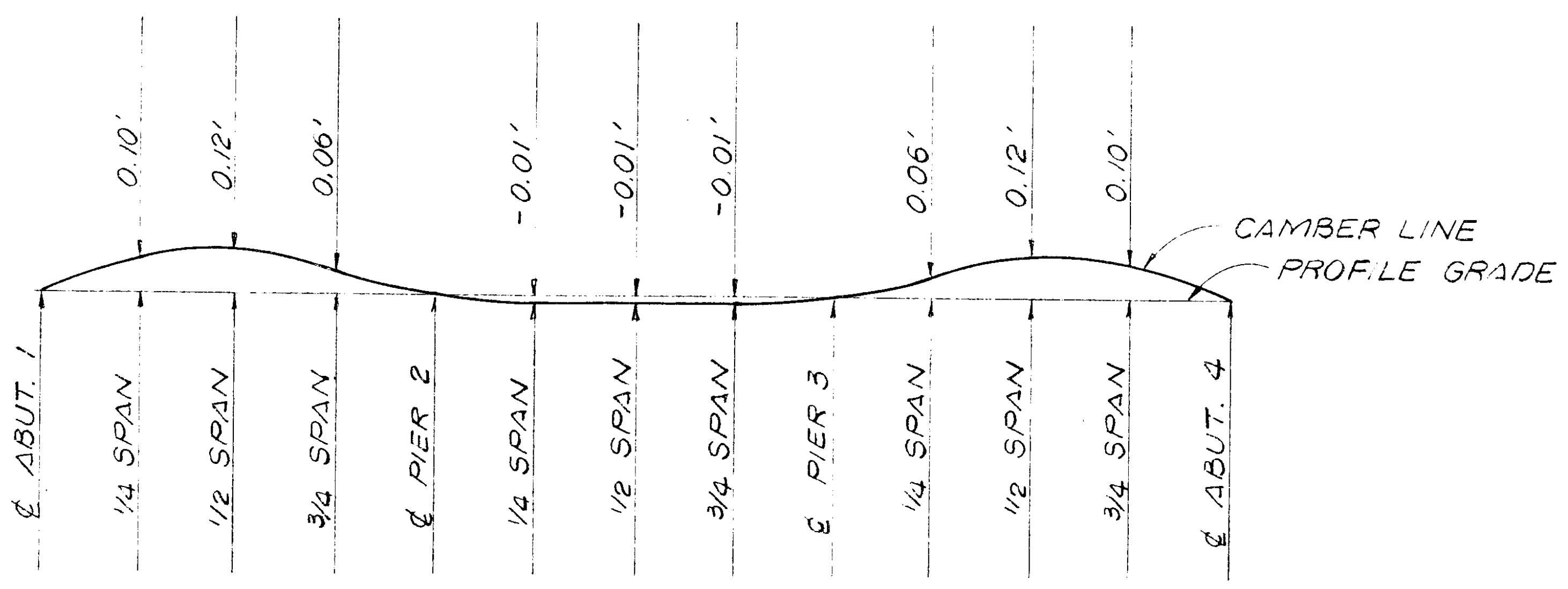
LOW RELAXATION STRAND
P_{JACK} = 4160 KIPS : LOSS IN STRESS = 20,000 P.S.I.

NORMAL RELAXATION STRAND
P_{JACK} = 4480 KIPS : LOSS IN STRESS = 32,000 P.S.I.

GENERAL:

1. CONCRETE: $f'c$ = 4000 P.S.I. @ 28 DAYS.
   $f'ci$ = 3500 P.S.I. @ TIME OF STRESSING.
2. TOTAL NUMBER OF GIRDERS = 5
3. CONTRACTOR TO SUBMIT ELONGATION AND JACKING CALCULATIONS BASED ON INITIAL STRESS @ ☒ = 0.861 TIMES JACKING STRESS.
4. $A_S = \frac{P_{JACK}}{.75 f's}$
5. DESIGN IS BASED ON U = 0.25 AND K = 0.0002 AND MODIFIED FOR HORIZONTAL CURVED ALIGNMENT.

   P_{JACK} SPECIFIED AT THE JACKING END(S) INCLUDES FRICTION LOSSES AND PROVISION FOR LOSS IN STRESS.
6. TENDONS TO BE JACKED TO 0.75 f's AND ANCHORED AT AN EQUIVALENT ANCHOR SET = 3/8"
7. STRESSING TO BE PERFORMED FROM BOTH ENDS.



DOES NOT INCLUDE ALLOWANCE FOR FALSEWORK SETTLEMENT.

CAMBER DIAGRAM
NOT TO SCALE

DRWN.: JCD
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PROJECT ENGINEER RCE NO 25413
Bruce Wilson
DIVISION ENGINEER RCE NO 13584

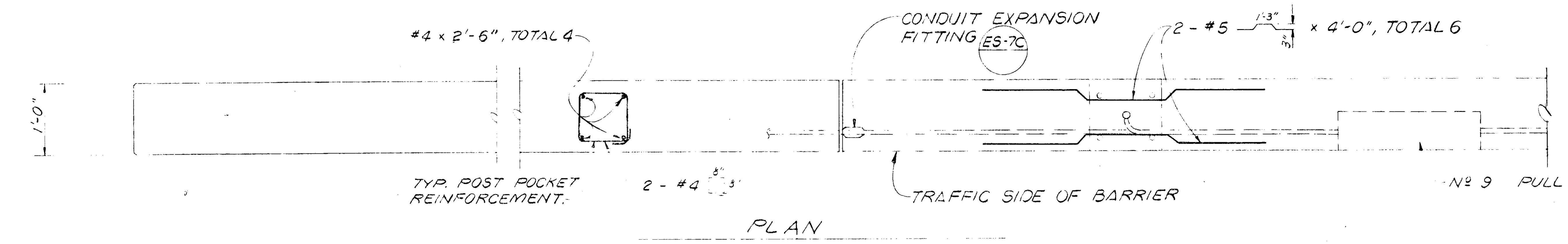
REVISION	DATE	DESCRIPTION	BY	BY
△				
△				

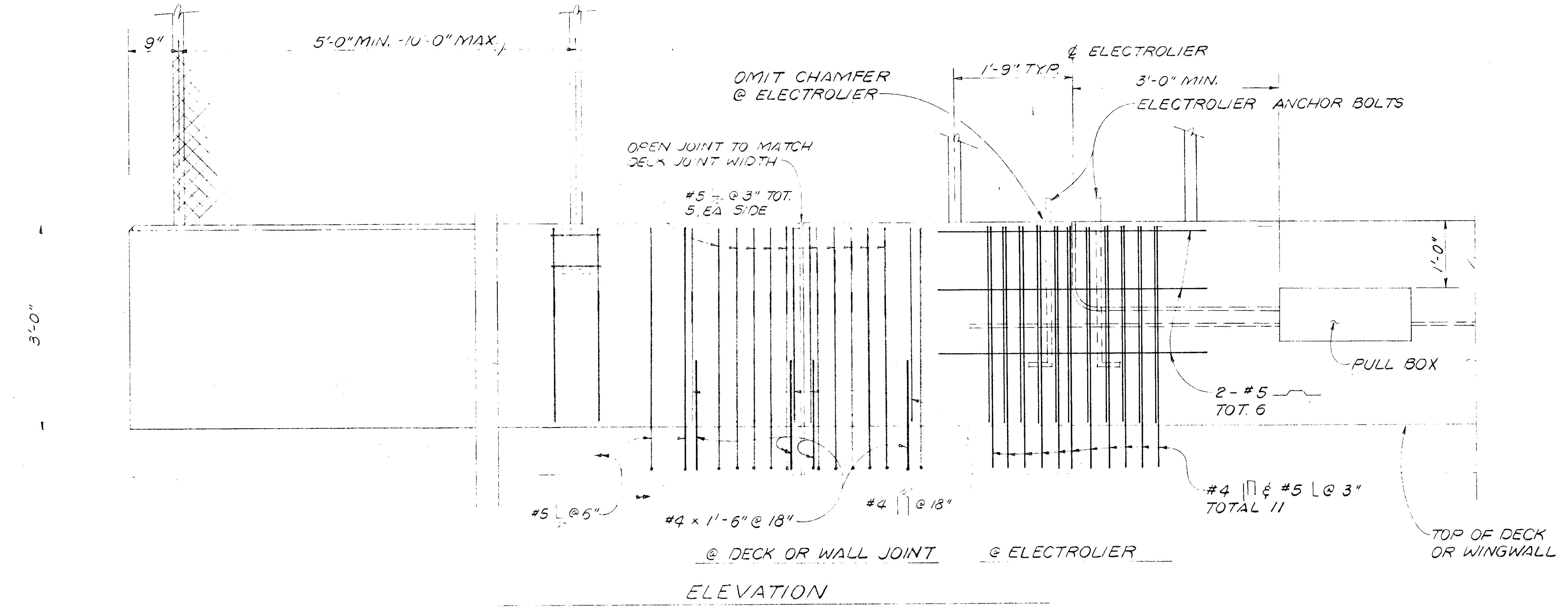
DESIGNED:
DRAWN:
CHECKED:

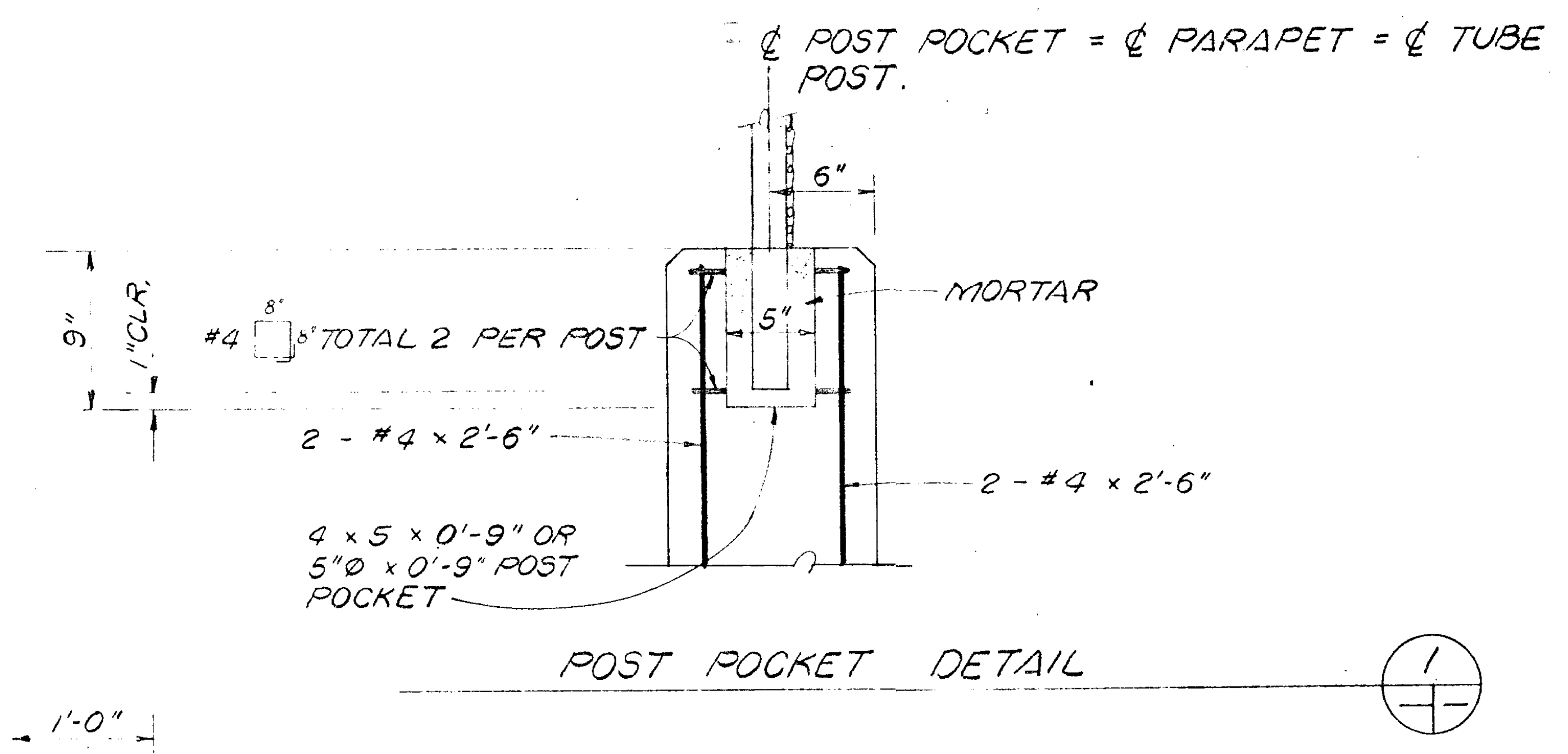
GIRDER LAYOUT
THOMAS ROAD AT UVAS CREEK

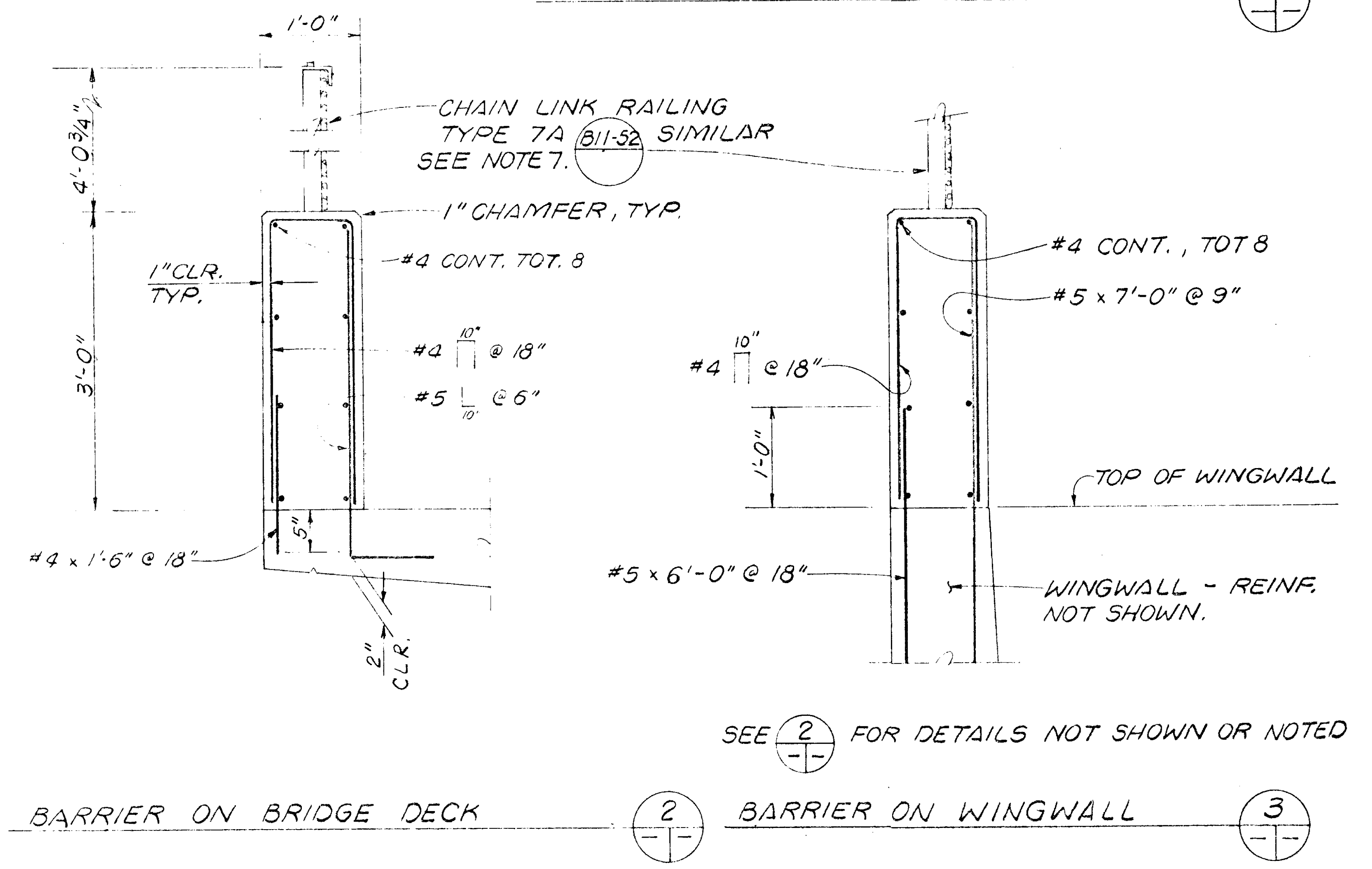
SUBMITTED:
DATE APPROVED
SCALE AS SHOWN
SPEC. No.
SHEET 40
FILE No.

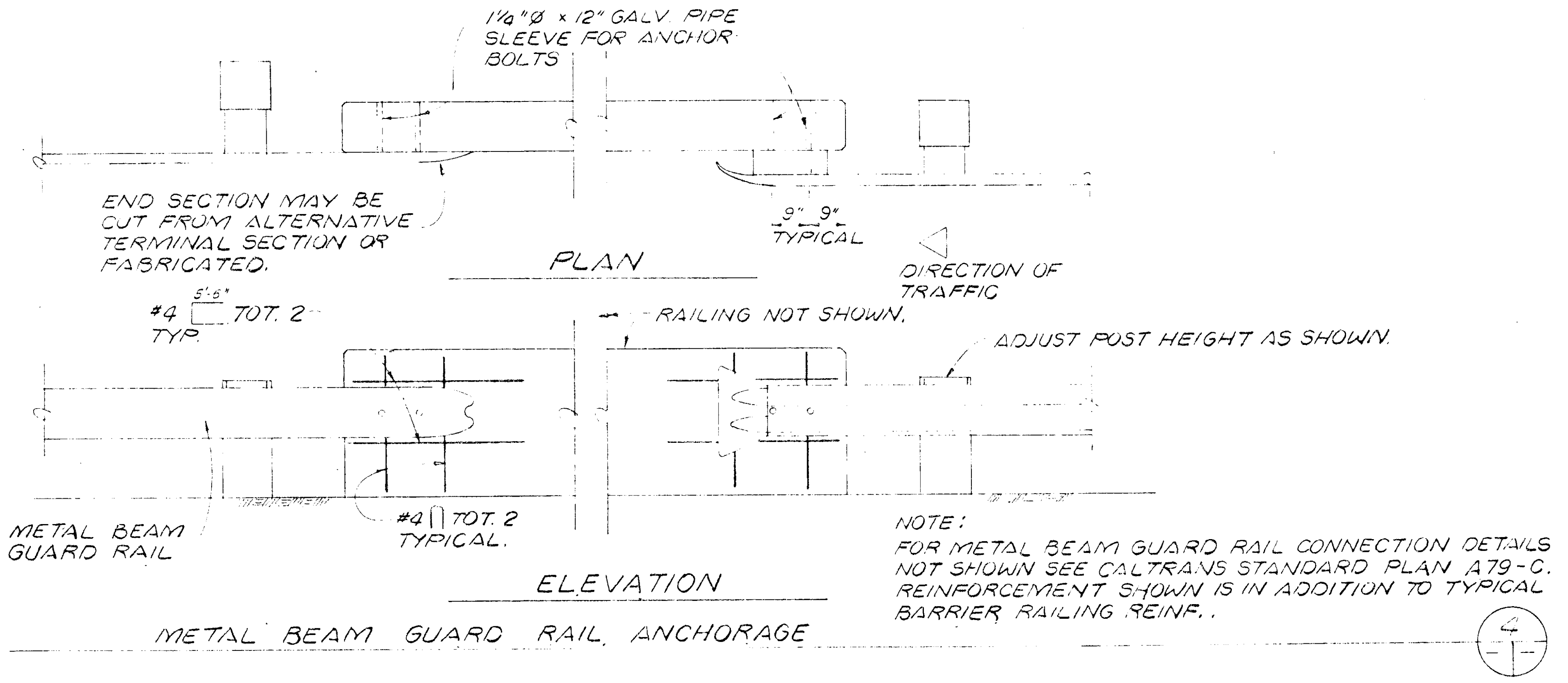
ENVIRONMENTAL ENHANCEMENT THRU ENGINEERING


#4 x 2'-6", TOTAL 4
CONDUIT EXPANSION FITTING ES-7C
2 - #5 x 4'-0", TOTAL 6
1'-0"
TYP. POST POCKET REINFORCEMENT.
2 - #4
TRAFFIC SIDE OF BARRIER
Nº 9 PULL BOX ES-7A ES-7D
PLAN








1¼"Ø x 12" GALV PIPE SLEEVE FOR ANCHOR BOLTS
END SECTION MAY BE CUT FROM ALTERNATIVE TERMINAL SECTION OR FABRICATED.
9" 9" TYPICAL
PLAN
DIRECTION OF TRAFFIC
#4 5'-6" TOT. 2 TYP.
RAILING NOT SHOWN.
ADJUST POST HEIGHT AS SHOWN.
METAL BEAM GUARD RAIL
#4 TOT. 2 TYPICAL.
ELEVATION
METAL BEAM GUARD RAIL ANCHORAGE
4

NOTE:
FOR METAL BEAM GUARD RAIL CONNECTION DETAILS NOT SHOWN SEE CALTRANS STANDARD PLAN A79-C. REINFORCEMENT SHOWN IS IN ADDITION TO TYPICAL BARRIER RAILING REINF..

NOTES

1. WALLS ARE TO BE BACKFILLED BEFORE BARRIER IS PLACED.
2. CLEARANCE TO REINFORCING STEEL IN BARRIER TO BE 1", EXCEPT AS NOTED. LONGITUDINAL REINFORCEMENT TO STOP AT ALL EXPANSION JOINTS.
3. SEE SHEET 29 FOR ELECTROLIER LOCATIONS.
4. SEE APPENDIX B OF SPECIFICATIONS FOR ELECTROLIER DETAILS.
5. SEE CALTRANS STANDARD PLANS ES-7A, 7B, 7C, 7D FOR ELECTRICAL DETAILS
6. SEE SHEET 39 FOR UTILITY DETAILS NOT SHOWN OR NOTED.
7. PROVIDE 4' FEET WIDE GATE IN CHAIN LINK RAILING TYPE 7A CENTERED AT STATION "T" 4+73.67.
PROVIDE 5" x 5" CUT-OUTS FOR FUTURE LOCK AND CHAIN BY OTHERS.
PROVIDE 3/16" x 3/4" MIN. TENSION BARS AROUND CUT-OUTS.
FABRIC SHALL BE TIED TO TENSION BARS WITH A MINIMUM OF THREE 11 GA. WIRE TIES.

ENVIRONMENTAL
ENHANCEMENT
THRU ENGINEERING

DRWN.: JCD
CHKD.: KWC
DEPT.: STRUCT.

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3-28-88
DATE:

Santa Clara Valley Water District

ACCEPTED BY DISTRICT: DATE 5/25/88

PROJECT ENGINEER RCE NO. 25413
Bruce Wilson
DIVISION ENGINEER RCE NO. 15867

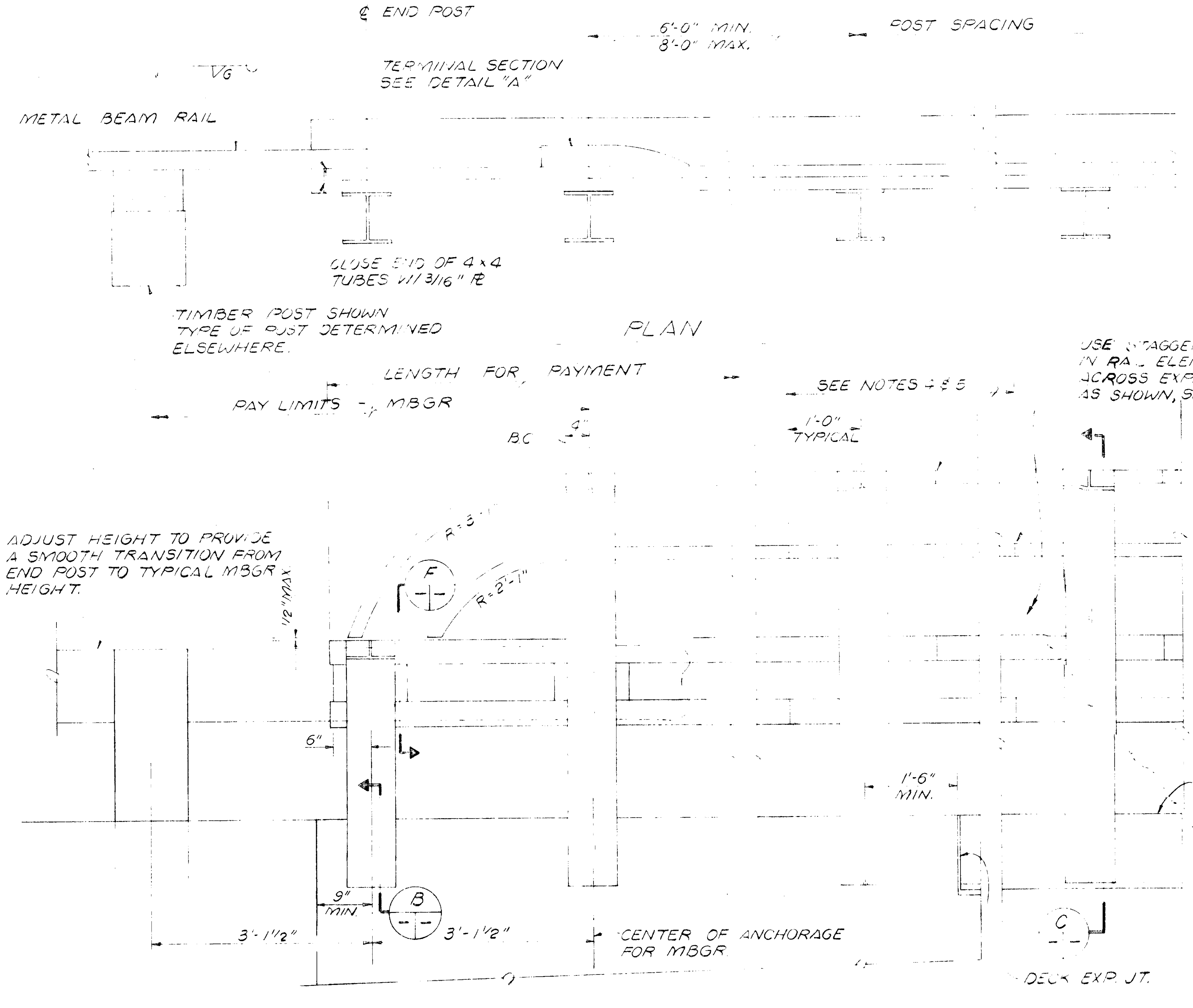
REVISION	DATE	DESCRIPTION	BY	BY
△				
△				

DESIGNED:
DRAWN:
CHECKED:

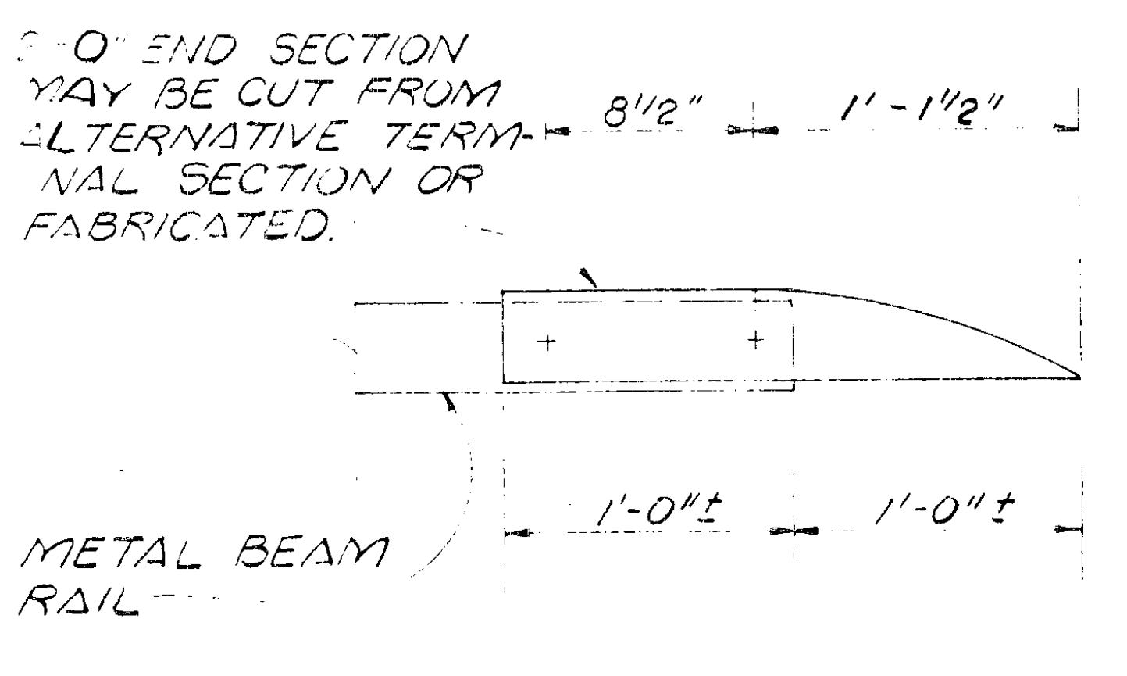
CONCRETE BARRIER
THOMAS ROAD AT UVAS CREEK

SUBMITTED:
DATE APPROVED
SCALE AS SHOWN
SPEC No
SHEET 41
FILE No

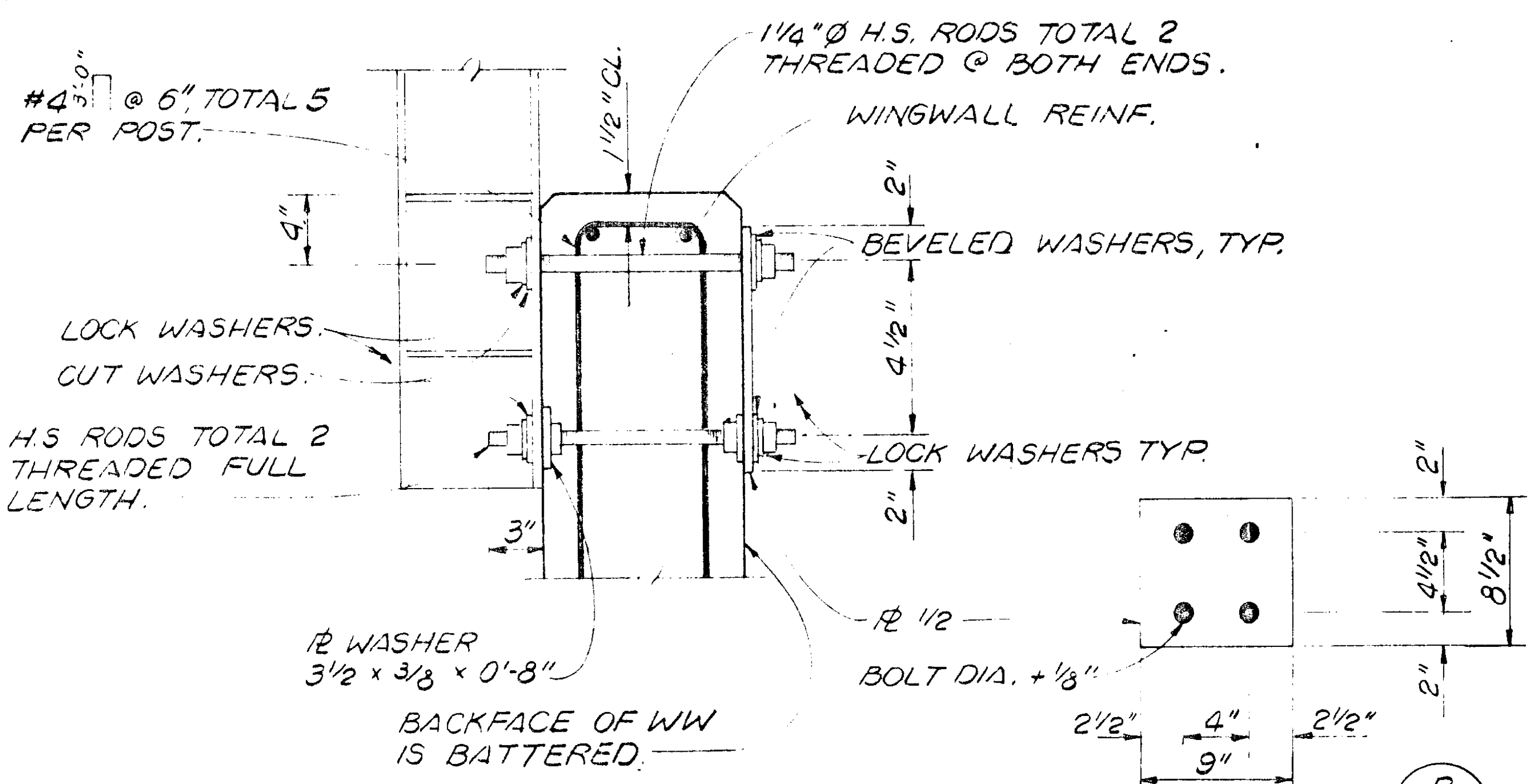
ENVIRONMENTAL ENHANCEMENT THRU ENGINEERING


℄ END POST
6'-0" MIN.
8'-0" MAX.
POST SPACING
TERMINAL SECTION SEE DETAIL "A"
METAL BEAM RAIL
CLOSE END OF 4 × 4 TUBES W/ 3/16" ℞
TIMBER POST SHOWN TYPE OF POST DETERMINED ELSEWHERE.
PLAN
LENGTH FOR PAYMENT
PAY LIMITS - MBGR
BC
4"
SEE NOTES 4 & 5
1'-0" TYPICAL
USE STAGGERED JOINTS IN RAIL ELEMENTS IN PANELS ACROSS EXPANSION JOINTS AS SHOWN, SEE DETAIL "H"
ADJUST HEIGHT TO PROVIDE A SMOOTH TRANSITION FROM END POST TO TYPICAL MBGR HEIGHT.
1/2" MAX
R=3'-1"
R=2'-1"
F
6"
9" MIN.
B
3'-1½"
3'-1½"
CENTER OF ANCHORAGE FOR MBGR
1'-6" MIN.
TOP OF DECK
C
DECK EXP. JT.

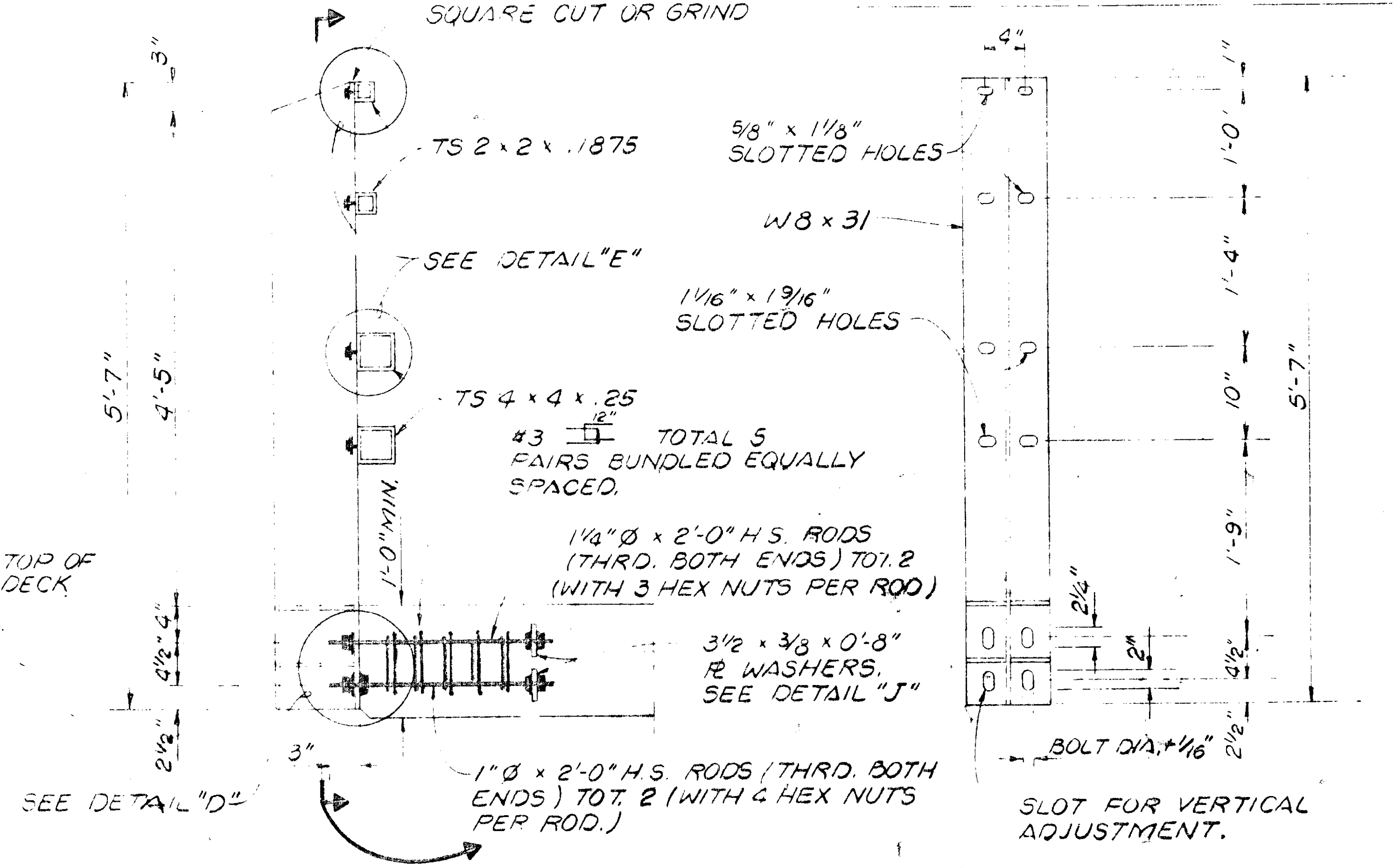
RAIL ELEVATION


3'-0" END SECTION MAY BE CUT FROM ALTERNATIVE TERMINAL SECTION OR FABRICATED.
8½"
1'-1½"
METAL BEAM RAIL
1'-0"±
1'-0"±

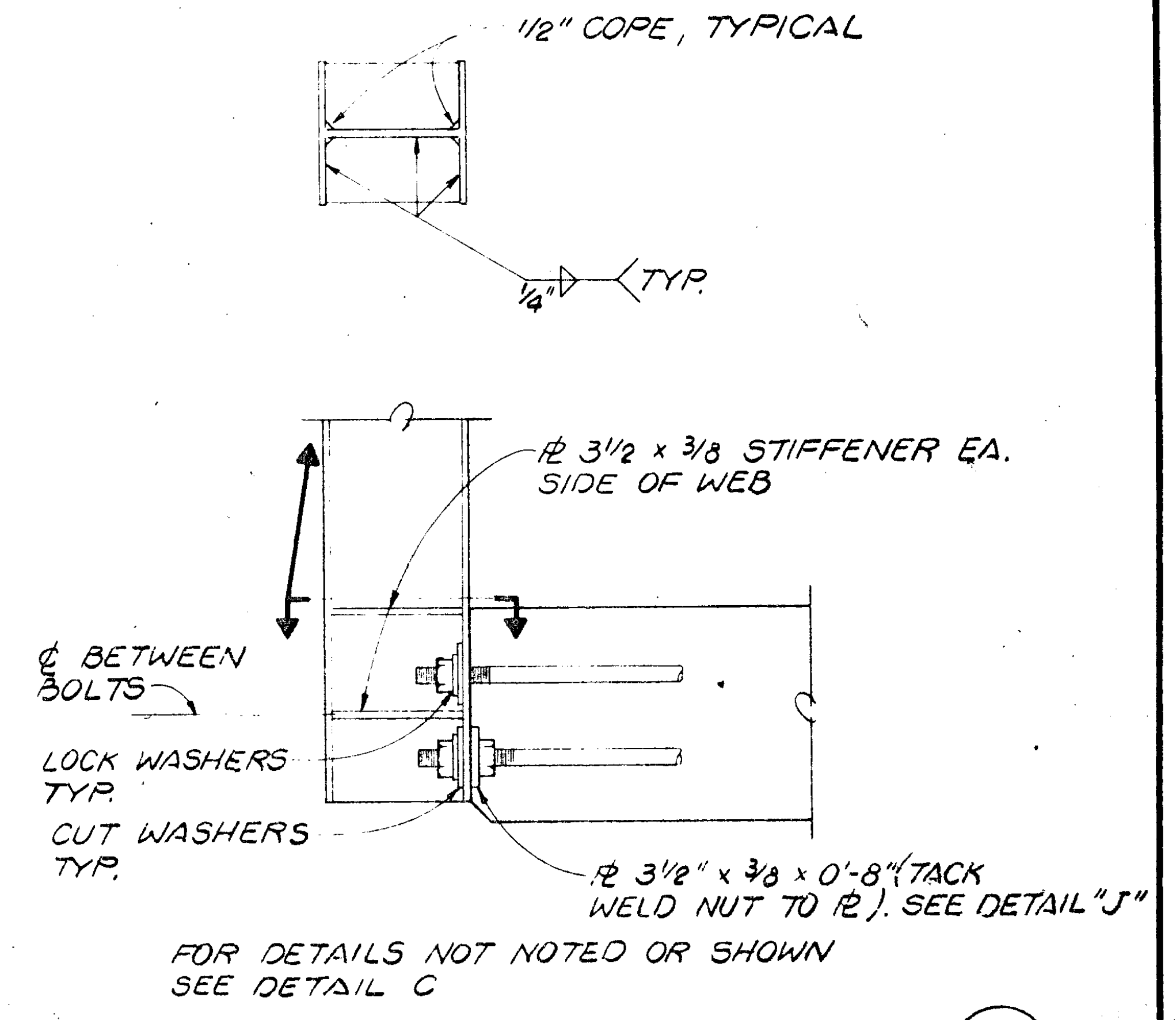
TERMINAL SECTION A 42|42


#4 3'-0" @ 6", TOTAL 5 PER POST.
1½" CL.
1¼"Ø H.S. RODS TOTAL 2 THREADED @ BOTH ENDS.
WINGWALL REINF.
2"
BEVELED WASHERS, TYP.
4"
4½"
LOCK WASHERS.
CUT WASHERS.
1"Ø H.S. RODS TOTAL 2 THREADED FULL LENGTH.
LOCK WASHERS TYP.
2"
3"
℞ WASHER 3½ × 3/8 × 0'-8"
℞ ½
BOLT DIA. + 1/8"
BACKFACE OF WW IS BATTERED.
2"
4½"
8½"
2"
2½"
4"
2½"
9"

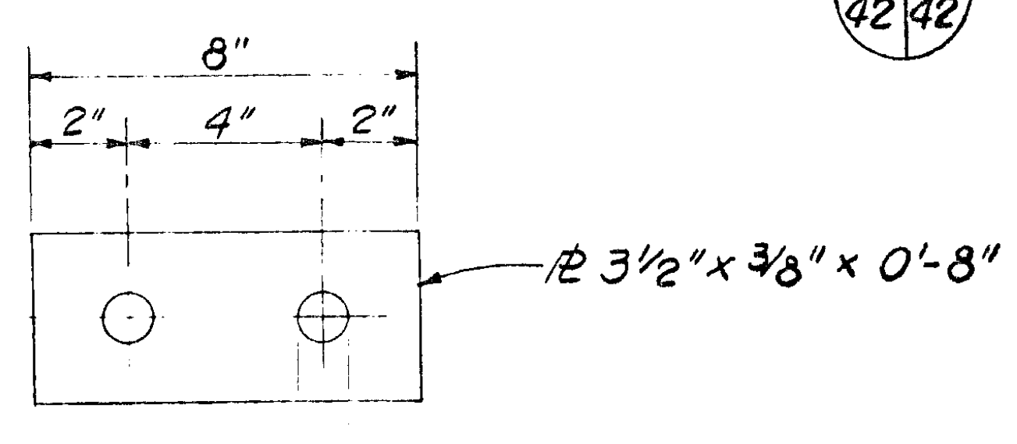
RAIL POST ON WALL SECTION B 42|42


SQUARE CUT OR GRIND
3"
TS 2 × 2 × .1875
SEE DETAIL "E"
TS 4 × 4 × .25
#3 12" TOTAL 5 PAIRS BUNDLED EQUALLY SPACED.
5'-7"
4'-5"
1'-0" MIN.
1¼"Ø × 2'-0" H.S. RODS (THRD. BOTH ENDS) TOT. 2 (WITH 3 HEX NUTS PER ROD)
3½ × 3/8 × 0'-8" ℞ WASHERS. SEE DETAIL "J"
4"
4½"
2½"
3"
SEE DETAIL "D"
1"Ø × 2'-0" H.S. RODS (THRD. BOTH ENDS) TOT. 2 (WITH 4 HEX NUTS PER ROD.)
4"
5/8" × 1⅛" SLOTTED HOLES
W8 × 31
1 1/16" × 1 9/16" SLOTTED HOLES
1'-0"
1'-4"
10"
1'-9"
5'-7"
2¼"
2"
4½"
2½"
BOLT DIA. + 1/16"
SLOT FOR VERTICAL ADJUSTMENT.

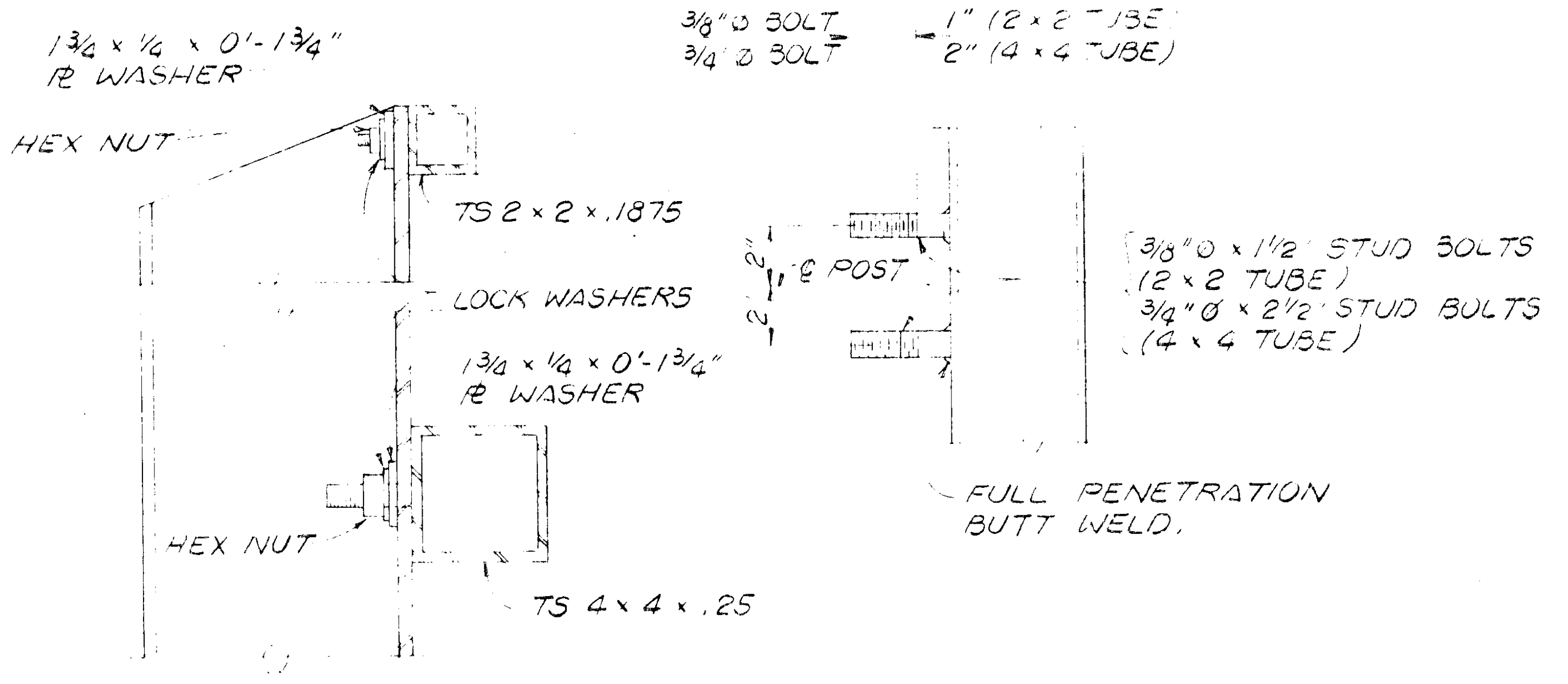
RAIL POST SECTION C 42|42


½" COPE, TYPICAL
¼"
TYP.
℞ 3½ × 3/8 STIFFENER EA. SIDE OF WEB
℄ BETWEEN BOLTS
LOCK WASHERS TYP.
CUT WASHERS TYP.
℞ 3½" × 3/8 × 0'-8" (TACK WELD NUT TO ℞). SEE DETAIL "J"
FOR DETAILS NOT NOTED OR SHOWN SEE DETAIL C

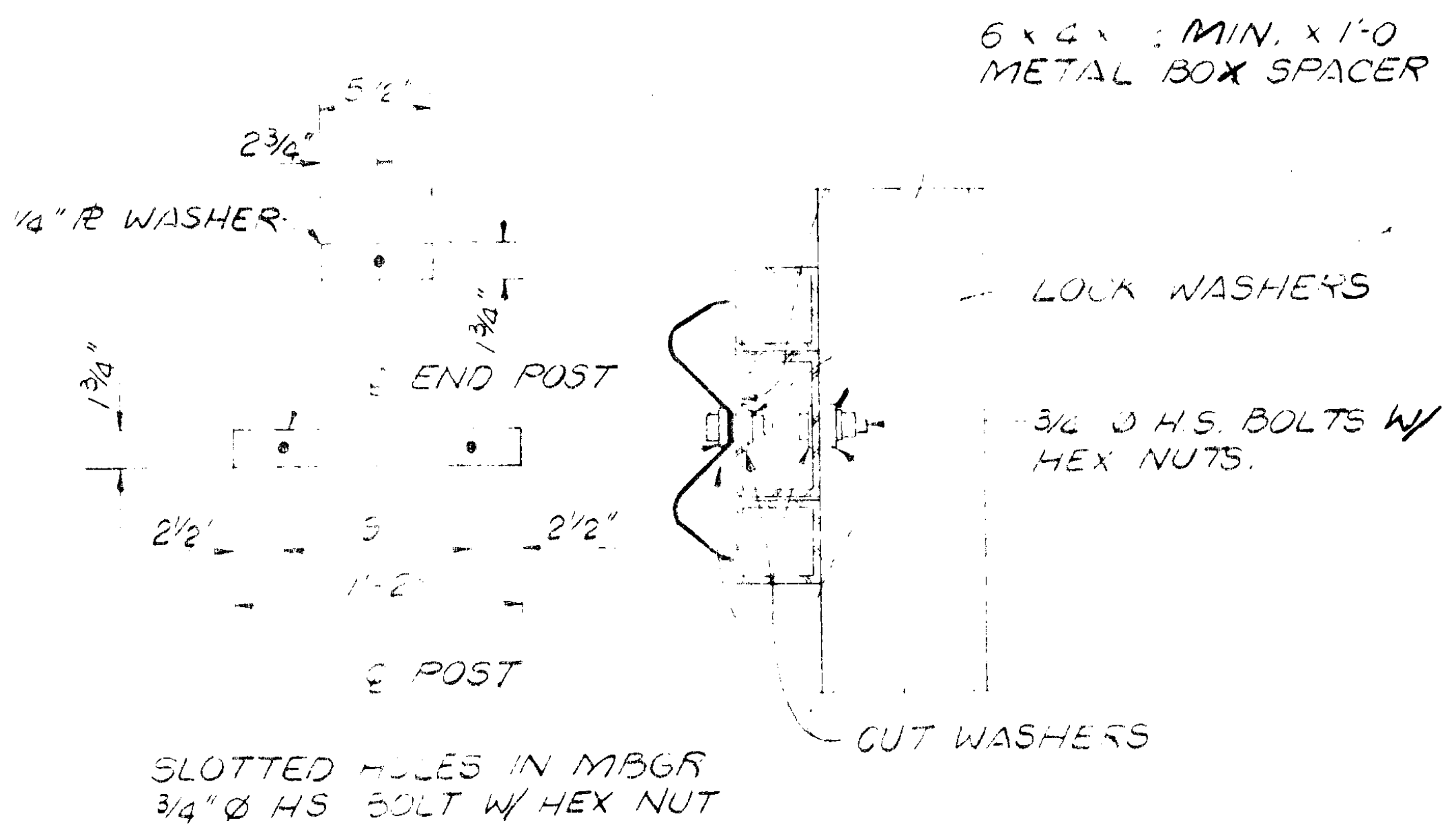
POST CONNECTION D 42|42



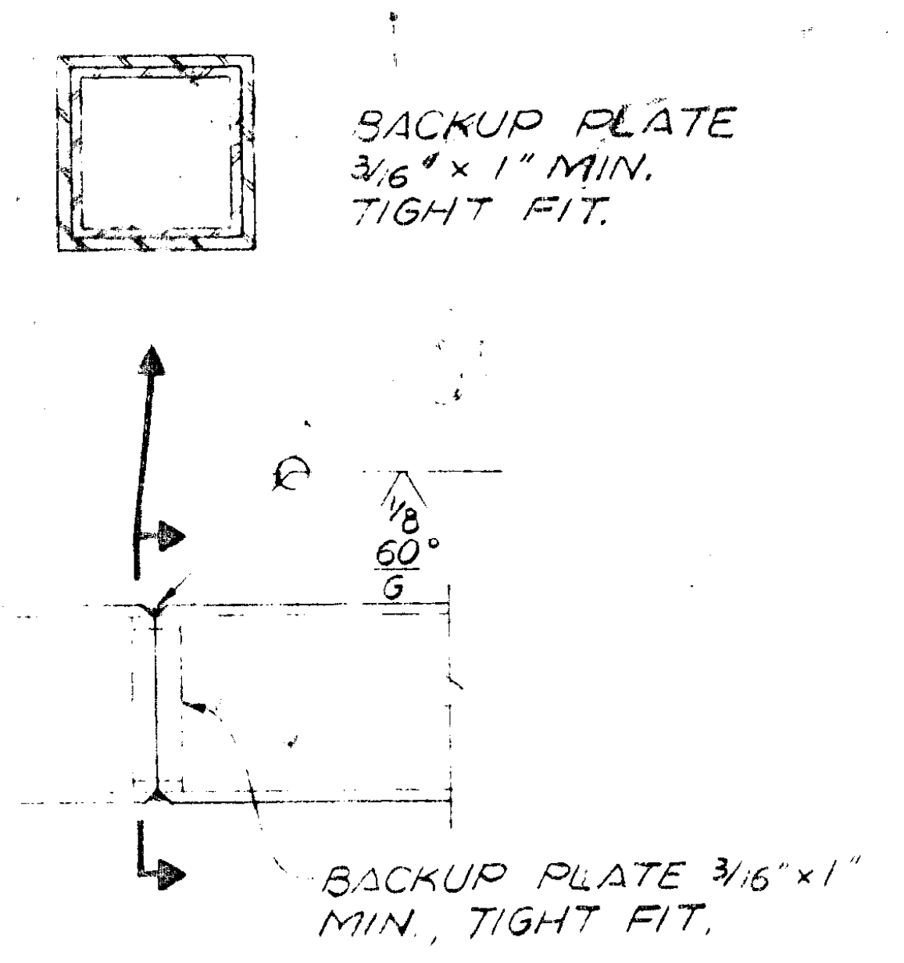
℞ WASHER DETAIL J 42|42



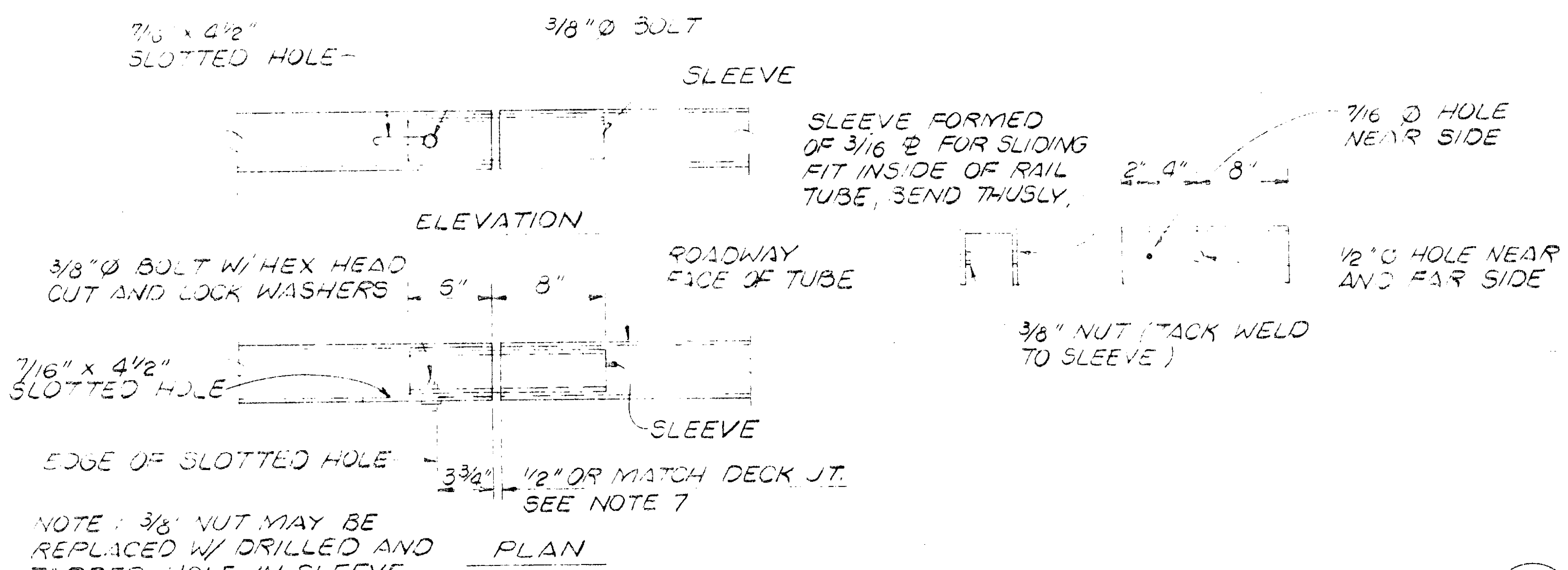
RAIL CONNECTIONS E 42|42


5½"
2¾"
¼" ℞ WASHER
1¾"
1¾"
℄ END POST
2½"
2½"
1'-2"
℄ POST
SLOTTED HOLES IN MBGR 3/4"Ø HS BOLT W/ HEX NUT
6 × 4 × MIN. × 1'-0 METAL BOX SPACER
LOCK WASHERS
3/4 Ø H.S. BOLTS W/ HEX NUTS.
CUT WASHERS

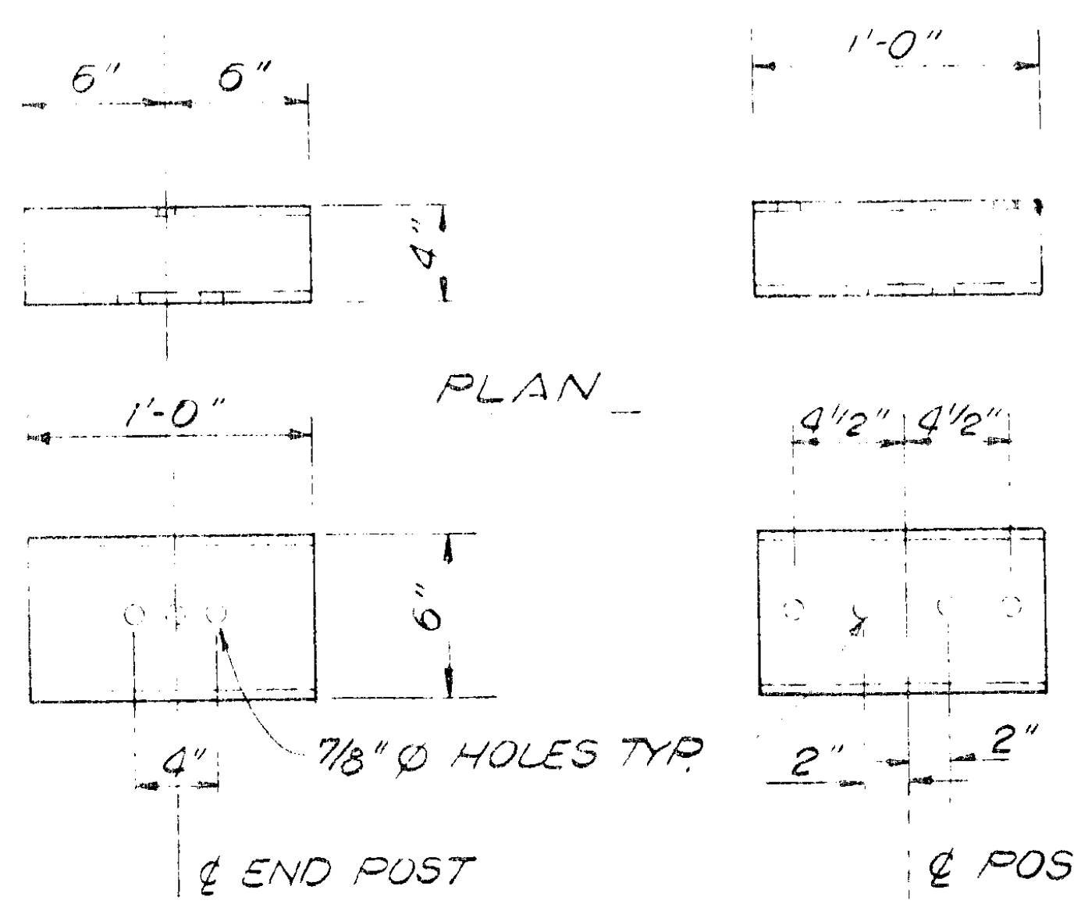
MBGR CONNECTION F 42|42


BACKUP PLATE 3/16" × 1" MIN. TIGHT FIT.
1/8
60°
G
BACKUP PLATE 3/16" × 1" MIN., TIGHT FIT.

WELDED TUBE SPLICE G 42|42


7/16 × 4½" SLOTTED HOLE
3/8"Ø BOLT
SLEEVE
SLEEVE FORMED OF 3/16 ℞ FOR SLIDING FIT INSIDE OF RAIL TUBE, BEND THUSLY.
7/16 Ø HOLE NEAR SIDE
2" 4" 8"
ELEVATION
3/8"Ø BOLT W/ HEX HEAD CUT AND LOCK WASHERS
5"
8"
ROADWAY FACE OF TUBE
½"Ø HOLE NEAR AND FAR SIDE
3/8" NUT (TACK WELD TO SLEEVE)
7/16" × 4½" SLOTTED HOLE
SLEEVE
EDGE OF SLOTTED HOLE
3¾"
½" OR MATCH DECK JT. SEE NOTE 7
NOTE: 3/8 NUT MAY BE REPLACED W/ DRILLED AND TAPPED HOLE IN SLEEVE.
PLAN

TUBE SPLICE H 42|42



METAL BOX SPACER DETAIL I 42|42

NOTES:

1. POSTS SHALL BE VERTICAL.
2. TUBING SHALL BE SHOP BENT TO FIT HORIZONTAL CURVE WHEN CURVE RADIUS IS LESS THAN 950'.
3. TUBING SHALL BE PARALLEL TO VERTICAL ALIGNMENT.
4. TUBING SHALL BE CONTINUOUS OVER NOT LESS THAN 3 INTERMEDIATE POSTS, WITH A MINIMUM LENGTH OF 3 PANELS EXCEPT AS NOTED.
5. NO MORE THAN ONE TUBE SPLICE PER PANEL IS PERMITTED EXCEPT AS NOTED.
6. SPACE POST TO PROVIDE A 1'-6" MINIMUM CLEAR BETWEEN EXPANSION JOINTS AND CENTERLINE OF POST.
7. RAIL JOINTS IN TOP AND BOTTOM TUBES AT DECK EXPANSION JOINTS SHALL PROVIDE ALLOWANCE FOR MOVEMENT EQUAL TO WIDTH OF DECK JOINT WITH CORRESPONDING INCREASE IN LENGTH OF SLEEVE.
8. RAILING ON BRIDGE WINGWALLS TO BE PLACED AFTER WALLS ARE BACKFILLED.
9. 3/4" STUD BOLT NUTS SHALL BE TORQUED TO 175 FT.-LBS. 3/8" STUD BOLT NUTS SHALL BE WRENCH TIGHT.
10. ANCHOR BOLT NUTS SHALL BE WRENCH TIGHT.
11. GALVANIZE RAIL ASSEMBLY AFTER FABRICATION.

DRWN.: JCD
CHKD.: KWC
DEPT.: STRUCT.

R+G RUTH AND GOING, INC.
Structural Engineering
2160 Lundy Ave. San Jose, CA 95131-1832 (408) 943-1640

JOB. A 17273

Roger L. Redig
ROGER L. REDIG S.E. 1431 EXP. 3-31-89
3-28-88
DATE:

Santa Clara Valley Water District

ACCEPTED BY DISTRICT: DATE 5/25/88
PROJECT ENGINEER RCE NO 25413
Bruce Wilson
DIVISION ENGINEER RCE NO 13851

REVISION	DATE	DESCRIPTION	BY	BY

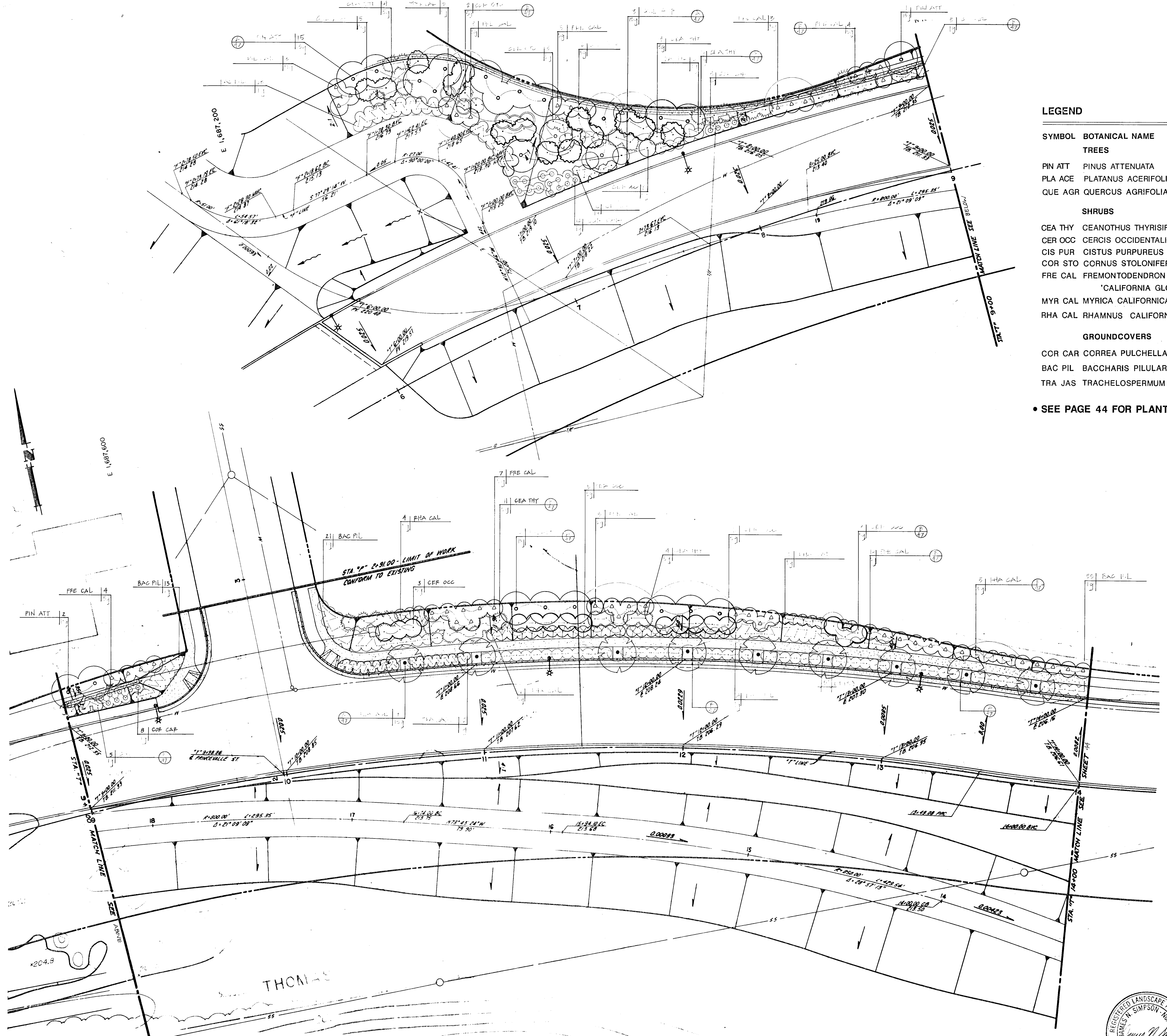
DESIGNED:
DRAWN
CHECKED
SUBMITTED:
DATE APPROVED

SANTA CLARA_CA Work Maps
SANTA CLARA_CA0272

METAL TUBE BRIDGE RAILING
THOMAS ROAD AT UVAS CREEK

SCALE NO SCALE
SPEC No
SHEET 42
FILE No.

FUNCTION ANALYSIS - VE PAYS



PLAN : THOMAS ROAD
1" = 20'

LEGEND

SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE	QTY
	TREES			
PIN ATT	PINUS ATTENUATA	KNOBCONE PINE	15 GAL.	24
PLA ACE	PLATANUS ACERIFOLIA "YARWOOD"	LONDON PLANE TREE	" "	17
QUE AGR	QUERCUS AGRIFOLIA	COAST LIVE OAK	" "	14
	SHRUBS			
CEA THY	CEANOTHUS THYRISIFLORUS "SKYLARK"	BLUE BLOSSOM	5 GAL.	34
CER OCC	CERCIS OCCIDENTALIS	WESTERN REDBUD	" "	19
CIS PUR	CISTUS PURPUREUS	ORCID ROCKROSE	" "	16
COR STO	CORNUS STOLONIFERA	REDBUD DOGWOOD	" "	7
FRE CAL	FREMONTODENDRON CALIFORNICUM 'CALIFORNIA GLORY'	FLANNEL BUSH	" "	50
MYR CAL	MYRICA CALIFORNICA	PACIFIC BAYBERRY	" "	5
RHA CAL	RHAMNUS CALIFORNICA 'EVE CASE'	COFFEEBERRY	" "	51
	GROUNDCOVERS			
COR CAR	CORREA PULCHELLA 'CARMINE BELLS'	AUSTRAILIAN FUCHSIA	1 GAL.	27
BAC PIL	BACCHARIS PILULARIS 'TWIN PEAKS'	DWARF COYOTE BRUSH	" "	190
TRA JAS	TRACHELOSPERMUM JASMINOIDES	STAR JASMINE	" "	30

- **SEE PAGE 44 FOR PLANTING NOTES**

NOTE: FOR LANDSCAPE USE ONLY.
REFER TO CIVIL SHEETS 14 THRU 20 FOR
FINISH GRADES AND LAYOUT INFORMATION.

ENVIRONMENTAL
ENHANCEMENT
THRU ENGINEERING

DRWN.: CLF
CHKD.: JNS
DEPT.: LA

RUTH AND GOING, INC.
Landscape Architecture
2180 LUNDY AVE. SAN JOSE, CA. 95131 (408) 943-1640

JOB. # 17273-182

James N Simpson 3-24-88
JAMES N. SIMPSON CA. LANDSCAPE ARCHITECT LIC. 2098 EXPIRES 1-31-90 DATE

JAMES N. SIMPSON No. 2098
3-25-88

Santa Clara Valley Water District

ACCEPTED BY DISTRICT: DATE 5/25/88

PROJECT ENGINEER R.C.E. NO 25413
Bruce Wilson
DIVISION ENGINEER R.C.E. NO 15871

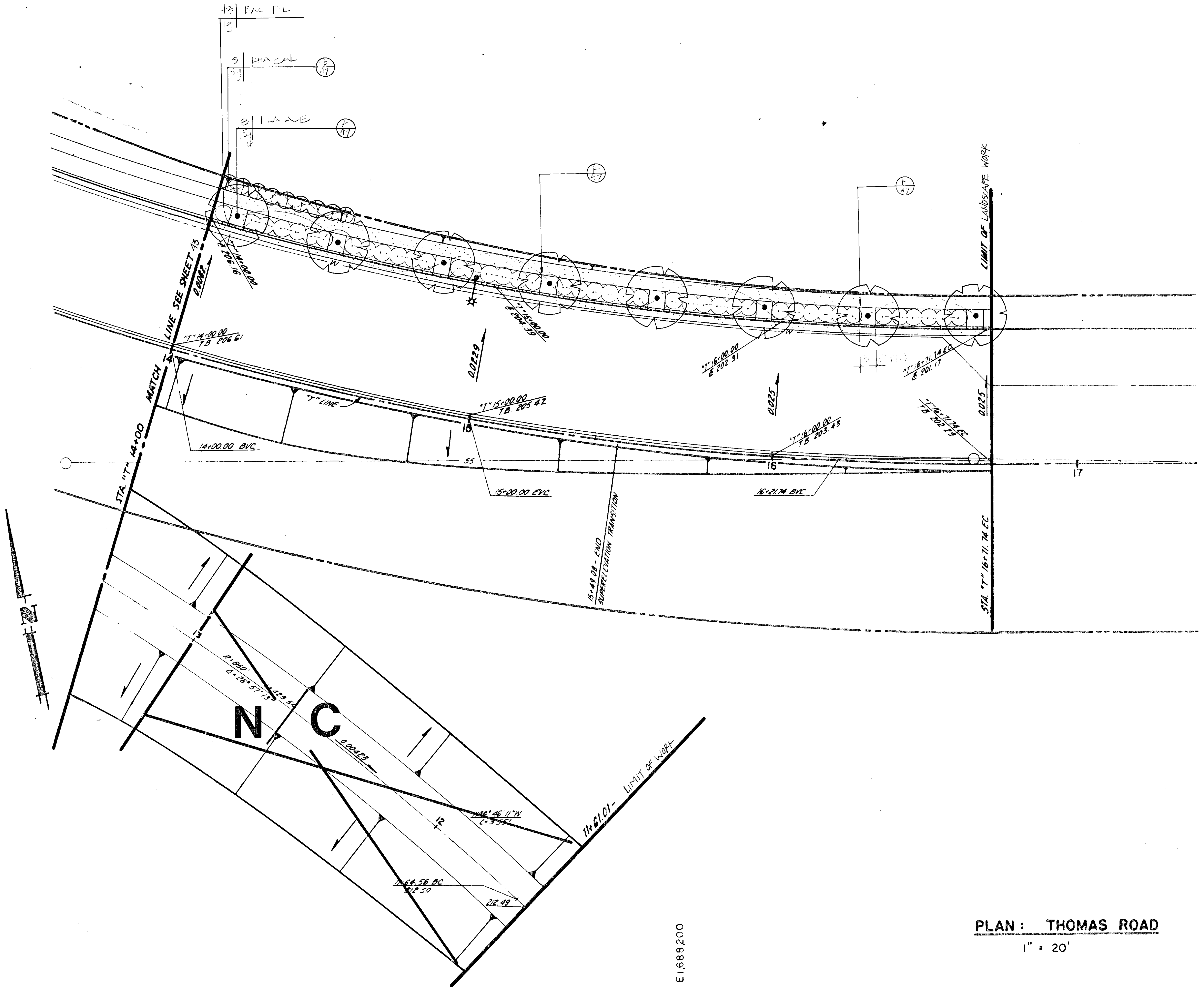
REVISION	DATE	DESCRIPTION	BY	BY
△				
△				

DESIGNED
DRAWN
CHECKED

THOMAS ROAD AT UVAS CREEK
LANDSCAPE PLAN

SUBMITTED
DATE APPROVED
SCALE AS SHOWN
SPEC. No.
SHEET 43
FILE No.

SANTA CLARA_CA Work Maps
SANTA CLARA_CA0273
AERO-GEODETIC CORPORATION
CONSULTING PHOTOGRAMMETRIC ENGINEERS
1600 WARBURTON AVENUE SANTA CLARA CALIFORNIA 95050



PLAN : THOMAS ROAD
1" = 20'

PLANTING NOTES:

1. PLAN IS DIAGRAMMATIC ONLY. EXACT LOCATION OF TREES AND SHRUBS SHALL BE DETERMINED IN THE FIELD.
2. ALL LOCAL GOVERNING CODES SHALL BE MET.
3. INSTALL ALL NEW TREES AND SHRUBS AS PER DETAILS.
4. ALL AREAS SHALL HAVE 100% COVERAGE WITH AN AUTOMATIC IRRIGATION SYSTEM.
5. CONTRACTOR SHALL ADVISE LANDSCAPE ARCHITECT OR OWNERS REPRESENTATIVE OF ALL SUBSTITUTIONS 2 WEEKS MINIMUM PRIOR TO BEGINNING OF DEMOLITION AND/OR CONSTRUCTION.
6. UPON COMPLETION REMOVE ALL EXTRANEOUS MATERIAL AND DEBRIS: BROOM AND WASH THE AREA CLEAN.
7. CONTRACTOR SHALL VERIFY ALL DISTANCES IN THE FIELD AND REPORT ANY DISCREPANCIES TO LANDSCAPE ARCHITECT OR OWNERS REPRESENTATIVE PRIOR TO THE BEGINNING OF THE PROJECT.
8. DAMAGES: PROMPTLY REPAIR ALL DAMAGES TO EXISTING SITE AT NO COST TO OWNER.
9. INSTALL JUTE MESH (AS PER MANUFACTURERS RECOMMENDATIONS) ON ALL SLOPES EXCEEDING 2:1.
10. EACH STREET TREE (SPECIFIED BY CITY OF GILROY PARKS AND RECREATION) SHALL BE INSTALLED WITH A BUBBLER IRRIGATION HEAD (SEE IRRIGATION PLAN). LOCATE BUBBLER ON UPHILL SIDE OF TREE.

KNOBCONE PINES AND COAST LIVE OAKS SHALL BE A MINIMUM OF 6' AWAY FROM FENCES OR WALLS

NOTE: FOR LANDSCAPE USE ONLY
REFER TO CIVIL SHEETS 14 THRU 20 FOR
FINISH GRADES AND LAYOUT INFORMATION.

ENVIRONMENTAL
ENHANCEMENT
THRU ENGINEERING

DRWN. CLF
CHKD. JNS
DEPT. LA

R+G RUTH AND GOING, INC.
Landscape Architecture
2180 LUNDY AVE SAN JOSE CA. 95131 (408) 943-1840

JOB. # 17273-182

James N. Simpson 3-24-88
JAMES N. SIMPSON CA. LANDSCAPE ARCHITECT LIC. 2098 EXPIRES 1-31-90 DATE

Santa Clara Valley Water District

ACCEPTED BY DISTRICT: DATE 5/25/88

PROJECT ENGINEER R.C.E. NO 25413
Bruce Wilson DIVISION ENGINEER R.C.E. NO 15851

REVISION	DATE	DESCRIPTION	BY	BY

JAMES N. SIMPSON No. 2098
3-25-88

DESIGNED
DRAWN
CHECKED

THOMAS ROAD AT UVAS CREEK
LANDSCAPE PLAN

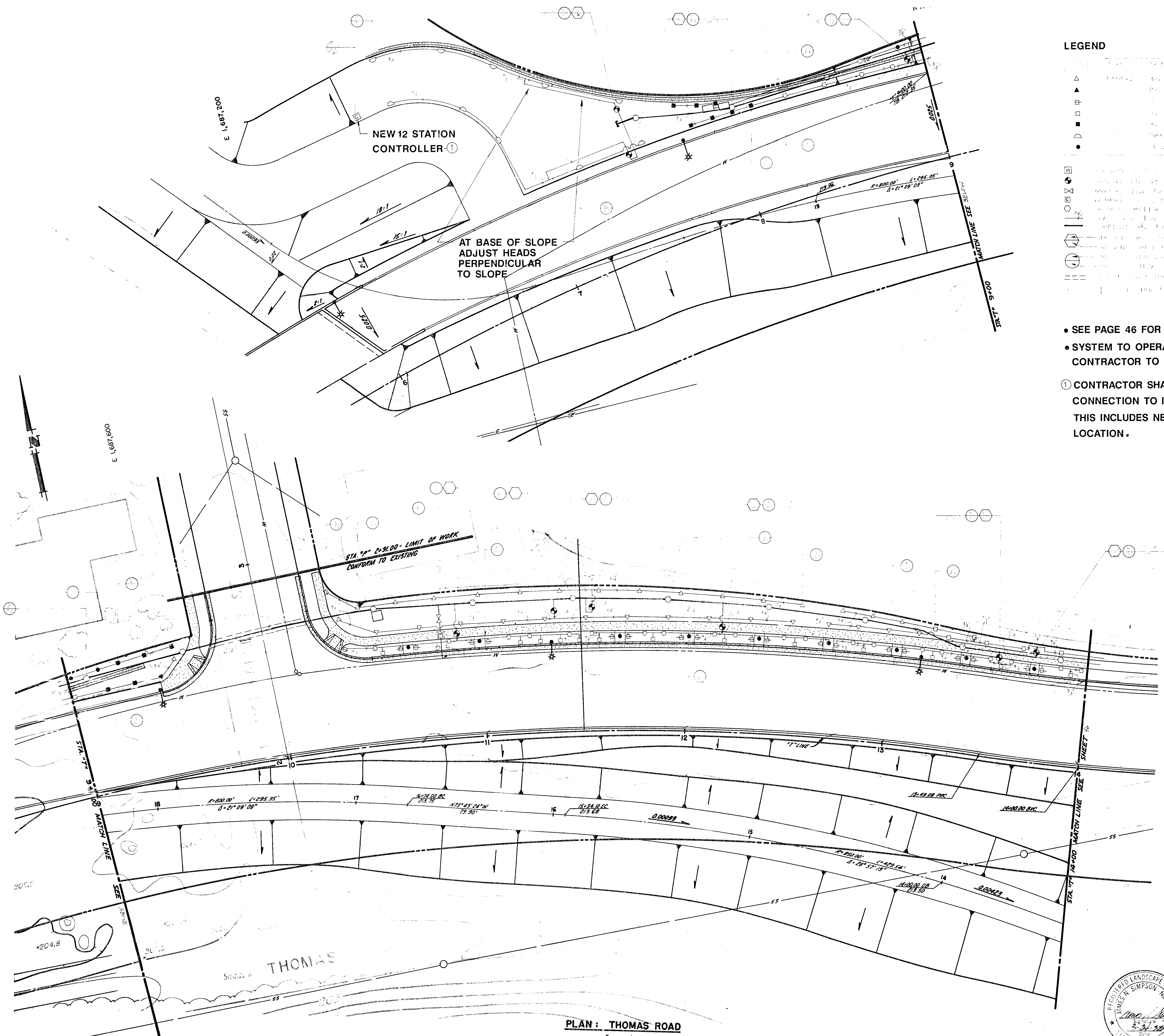
SUBMITTED
DATE APPROVED
SCALE AS SHOWN
SPEC. No.
SHEET 44
FILE No

SANTA CLARA_CA Work Maps
~~SANTA CLARA_CA0274~~

AERO-GEODETIC CORPORATION
CONSULTING PHOTOGRAMMETRIC ENGINEERS
1600 WARBURTON AVENUE SANTA CLARA CALIFORNIA 95050

FUNCTION ANALYSIS - VE PAYS

ENVIRONMENTAL
ENHANCEMENT
THRU ENGINEERING



PLAN: THOMAS ROAD
1" = 20'

LEGEND

- SEE PAGE 46 FOR IRRIGATION NOTES
- SYSTEM TO OPERATE AT 32.60 GPM AT 56 PSI STATIC PRESSURE. CONTRACTOR TO VERIFY STATIC PRESSURE PRIOR TO CONSTRUCTION.

① CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING POWER FOR CONNECTION TO IRRIGATION CONTROLLER W/P,G &E AND CITY OF GILROY. THIS INCLUDES NEW SERVICE SOURCE AND STUB-OUT TO CONTROLLER LOCATION.

NOTE: FOR IRRIGATION USE ONLY
REFER TO CIVIL SHEETS 14 THRU 20 FOR FINISH GRADES AND LAYOUT INFORMATION.

DRWN.:
CHKD.:
DEPT.:

R+G RUTH AND GOING, INC.
Landscape Architecture
2180 LUNDY AVE. SAN JOSE, CA. 95131 (408) 943-1840

JOB.# 17273-182

James N. Simpson
JAMES N. SIMPSON CA. LANDSCAPE ARCHITECT LIC. 2098 EXPIRES 1-31-90
DATE 3-24-88

JAMES N. SIMPSON No. 2098
3-24-88

Santa Clara Valley Water District

ACCEPTED BY DISTRICT: DATE 5/25/88

PROJECT ENGINEER R.C.E. NO. 25413
DIVISION ENGINEER Bruce Wilson R.C.E. NO. 15891

REVISION	DATE	DESCRIPTION	BY	BY
△				
△				

DESIGNED:
DRAWN:
CHECKED:

THOMAS ROAD AT UVAS CREEK IRRIGATION PLAN

SUBMITTED:
DATE APPROVED
SCALE AS SHOWN
SPEC. No.
SHEET 45
FILE No.

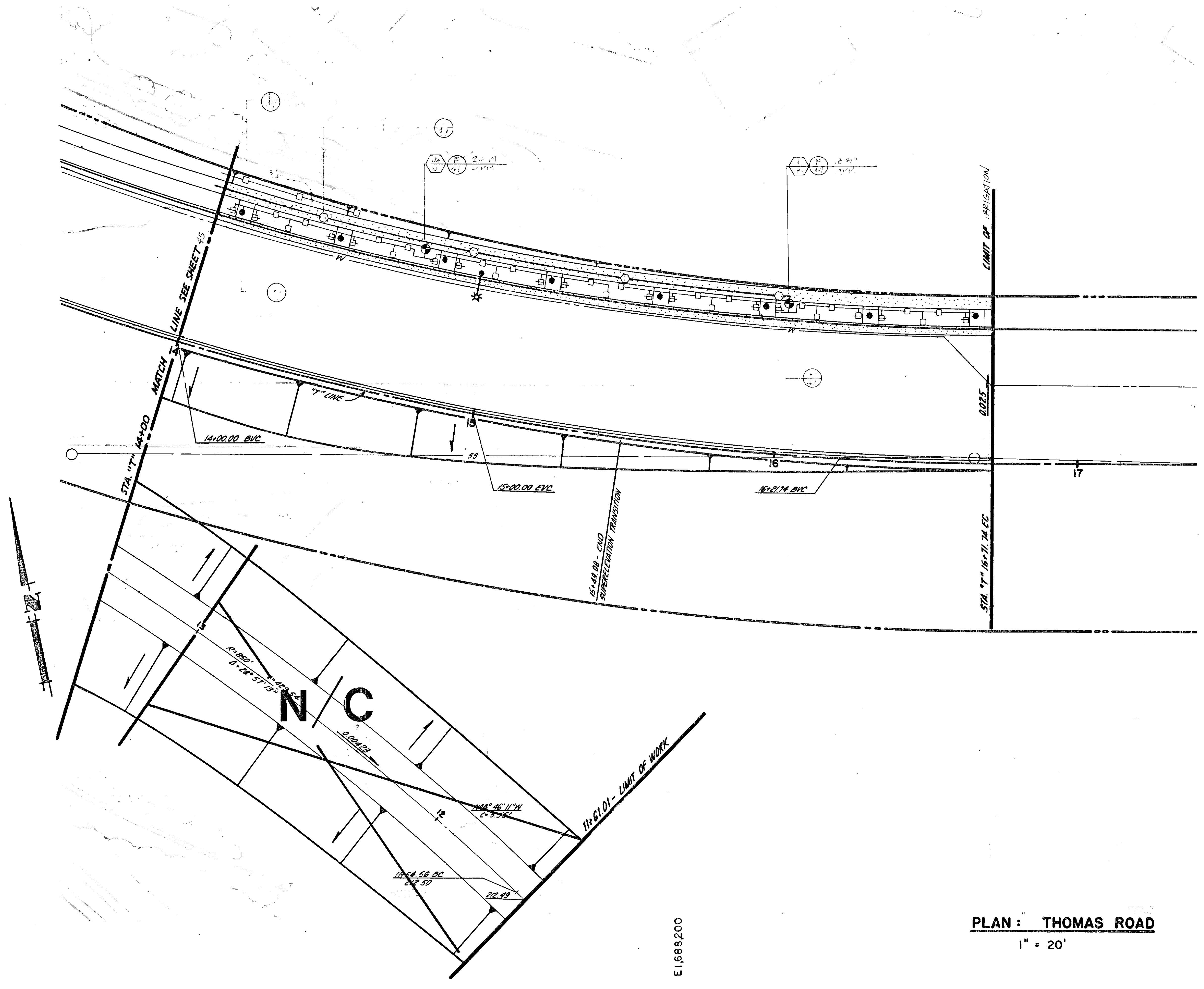
SAFETY PAYS

SANTA CLARA_CA Work Maps
SANTA CLARA_CA0275

AERO-GEODETIC CORPORATION
CONSULTING PHOTOGRAMMETRIC ENGINEERS
1600 WARBURTON AVENUE SANTA CLARA CALIFORNIA 95050

FUNCTION ANALYSIS - VE PAYS

ENVIRONMENTAL
ENHANCEMENT
THRU ENGINEERING



PLAN : THOMAS ROAD
1" = 20'

IRRIGATION NOTES:

1. PLAN IS DIAGRAMMATIC ONLY. EXACT LOCATION OF LINES AND HEADS SHALL BE DETERMINED IN THE FIELD. LINES SHALL BE IN A COMMON TRENCH WHERE POSSIBLE.
2. HEAD AND VALVE LOCATIONS SHALL BE STAKED OUT IN THE FIELD 48 HOURS BEFORE INSTALLATION, AND APPROVED BY GILROY PARKS AND RECREATION DEPT. (CALL 408-842-0221).
3. VERIFY EXISTING SITE AND SEE THAT ALL LOCAL CODES ARE MET.
4. LANDSCAPE IRRIGATION CONTRACTOR SHALL PREPARE AND ISSUE TO THE OWNER, AT THE COMPLETION OF THE INSTALLATION, AN ANNUAL CHART INDICATING OPERATING DATES, TIME, CYCLES FOR EACH VALVE IN THE SYSTEM.
5. DO NOT WILLFULLY INSTALL THE SPRINKLER SYSTEM AS SHOWN ON THE DRAWINGS WHEN IT IS OBVIOUS IN THE FIELD THAT UNKNOWN OBSTRUCTIONS OR DIFFERENCES IN THE DIMENSIONS EXIST THAT MIGHT NOT HAVE BEEN KNOWN DURING ENGINEERING. SUCH OBSTRUCTIONS OR DIFFERENCES SHALL BE BROUGHT TO THE ATTENTION OF THE GILROY PARKS AND RECREATION DEPT. (CALL 408-842-0221). IN THE EVENT THIS NOTIFICATION IS NOT PERFORMED, THE IRRIGATION CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR ANY REVISIONS NECESSARY.
6. ALL SPRINKLER EQUIPMENT NOT OTHERWISE DETAILED OR SPECIFIED SHALL BE INSTALLED AS PER MANUFACTURER'S RECOMMENDATIONS AND SPECIFICATIONS.
7. THE IRRIGATION CONTRACTOR SHALL FLUSH AND ADJUST ALL SPRINKLER HEADS AND VALVES FOR OPTIMUM COVERAGE WITH MINIMAL OVERSPRAY ONTO PAVEMENTS AND FENCES.
8. APPLY AND PAY FOR ALL PERMITS REQUIRED FOR THIS PORTION OF THE WORK.
9. COORDINATE THE INSTALLATION OF ALL SPRINKLER MATERIALS, INCLUDING PIPE, WITH THE LANDSCAPE DRAWINGS TO AVOID INTERFERING WITH THE PLANTING OF TREES, SHRUBS, OR OTHER PLANTING.
10. IT IS THE INTENT OF THESE DRAWINGS TO INDICATE A COMPLETE SPRINKLER SYSTEM INSTALLED AND READY FOR USE WITHOUT FURTHER COST TO THE OWNER.
11. THE SPRINKLER SYSTEM SHALL BE UNCONDITIONALLY GUARANTEED FOR A PERIOD OF ONE YEAR FROM THE DATE OF ACCEPTANCE. MANUFACTURER WARRANTIES SHALL NOT REPLACE THIS GUARANTEE AND CONTRACTOR SHALL BE LIABLE FOR REPAIRS AND REPLACEMENT OF FAILED MATERIAL.
12. THE SPRINKLER INSTALLATION SHALL BE DEEMED INCOMPLETE UNTIL ALL SPRINKLER HEADS, VALVES AND ALL RELATED IRRIGATION EQUIPMENT HAVE BEEN CHECKED AND ADJUSTED TO BEST CONFORM TO THE CONDITIONS AND REQUIREMENTS THAT WILL PREVAIL AT THE FINISH SITE.
13. ALL IRRIGATION TO BE INSTALLED AT FINISH GRADE OR BELOW AS PER PLAN.
14. DESIGN LAYOUT FOR IRRIGATION SO THAT ALL LANDSCAPE AREAS ARE WITHIN 50 FEET OF A QUICK COUPLER.

NOTE: FOR IRRIGATION USE ONLY
REFER TO CIVIL SHEETS 14 THRU 20 FOR
FINISH GRADES AND LAYOUT INFORMATION.

DRWN.: JT
CHKD.:
DEPT.: LA

R+G RUTH AND GOING, INC.
Landscape Architecture
2180 LUNDY AVE. SAN JOSE, CA. 95131 (408) 943-1840

JOB.# 17273-182

James N. Simpson 3-24-88
JAMES N. SIMPSON CA. LANDSCAPE ARCHITECT LIC. 2098 EXPIRES 1-31-90 DATE

Santa Clara Valley Water District

ACCEPTED BY DISTRICT: DATE 5/25/88

PROJECT ENGINEER R.C.E. NO. 25413
Bruce Wilson
DIVISION ENGINEER R.C.E. NO. 15851

REVISION	DATE	DESCRIPTION	BY	BY
△				
△				

REGISTERED LANDSCAPE ARCHITECT
JAMES N. SIMPSON No. 2098
Signature
3-24-88
Date
STATE OF CALIFORNIA

DESIGNED:
DRAWN:
CHECKED:

THOMAS ROAD AT UVAS CREEK
IRRIGATION PLAN

SUBMITTED:
DATE APPROVED
SCALE AS SHOWN
SPEC. No.
SHEET 46
FILE No.

SAFETY PAYS

~~SANTA CLARA_CA Work Maps~~
SANTA CLARA_CA0276

AERO-GEODETIC CORPORATION
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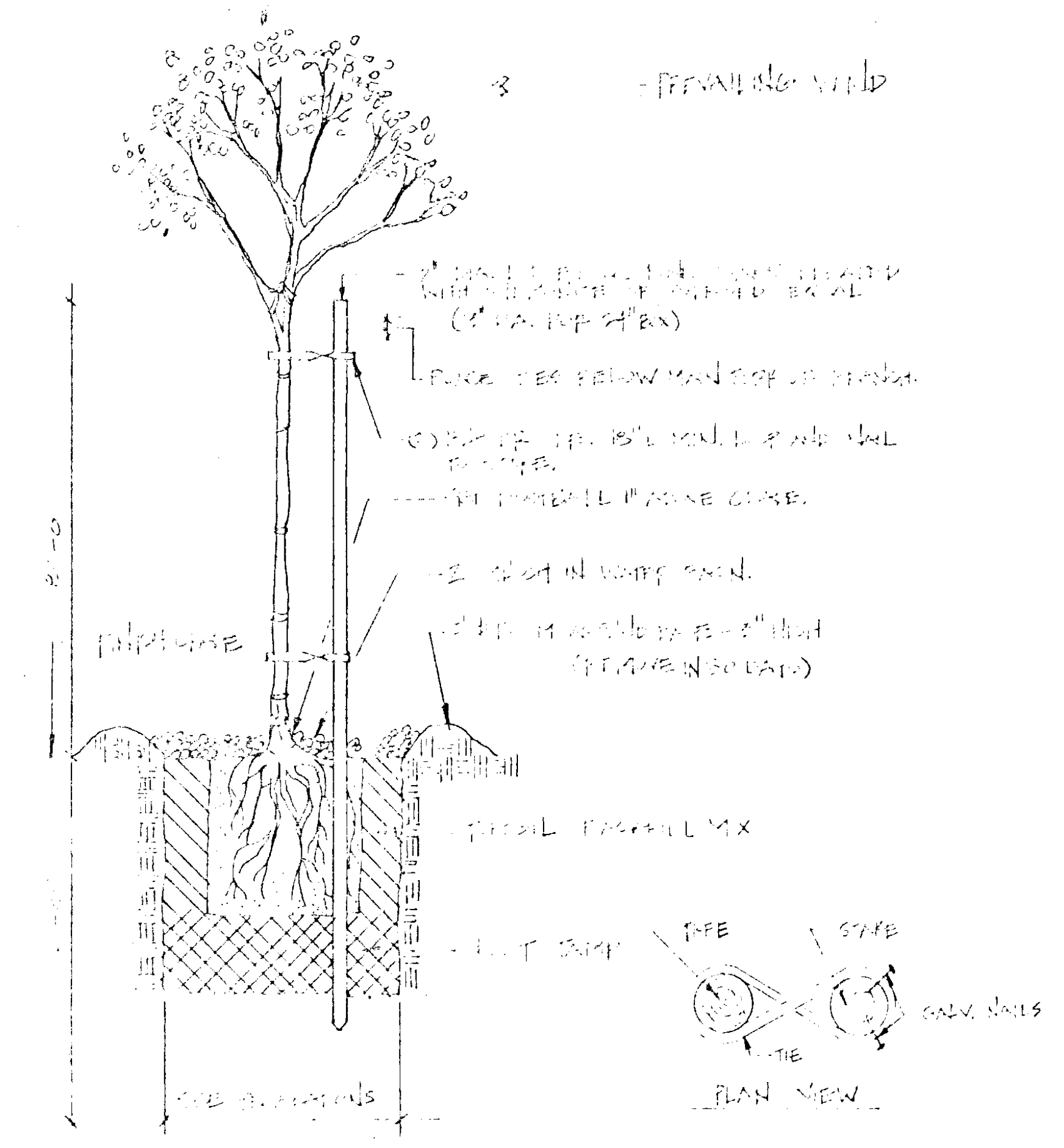
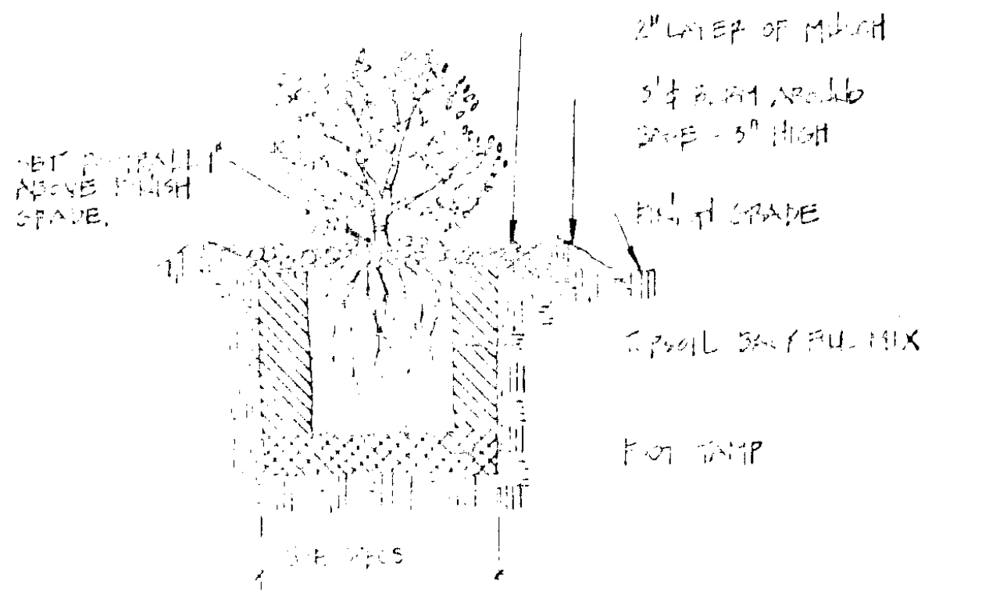
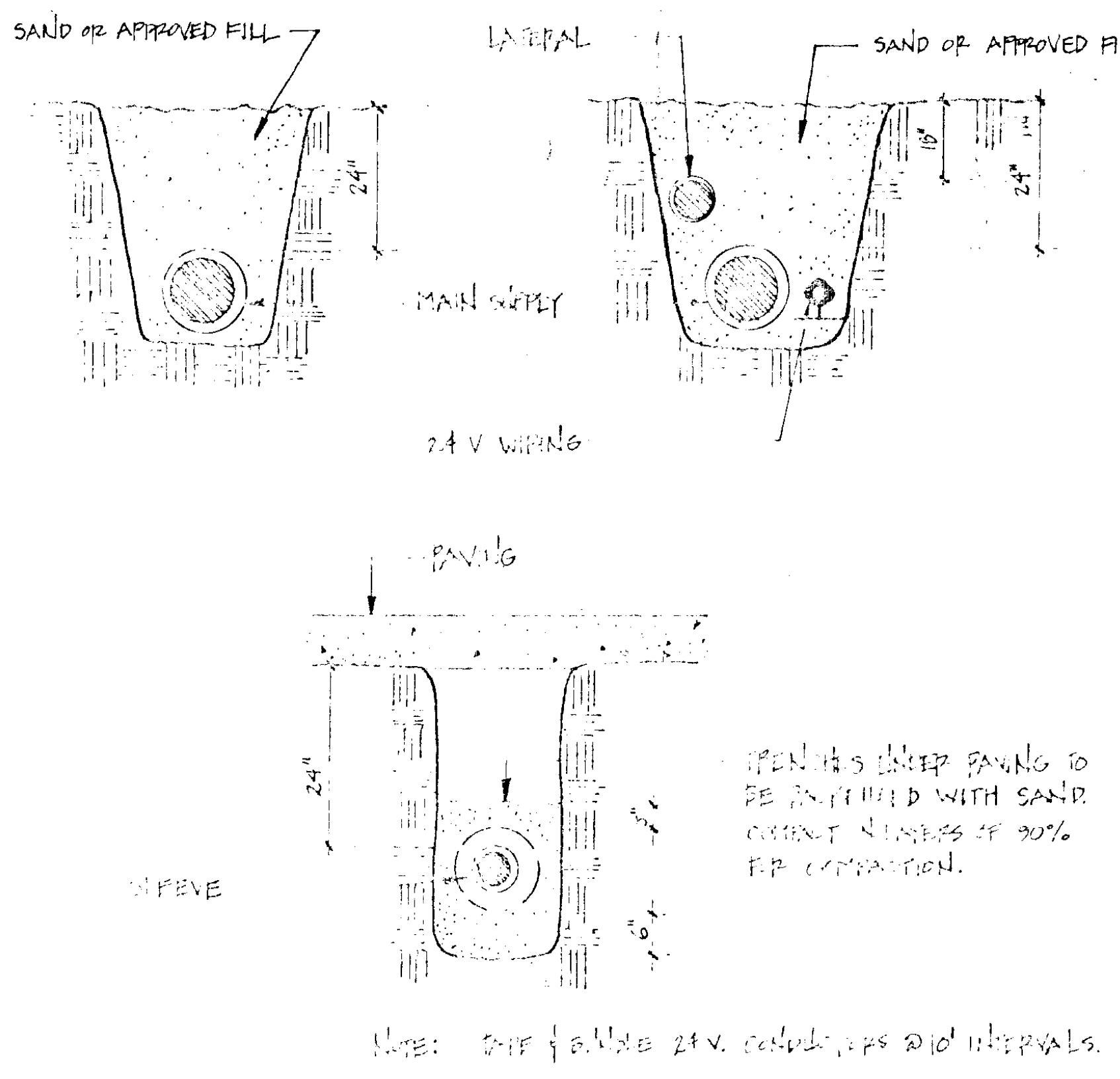
1600 WARBURTON AVENUE SANTA CLARA CALIFORNIA 95050



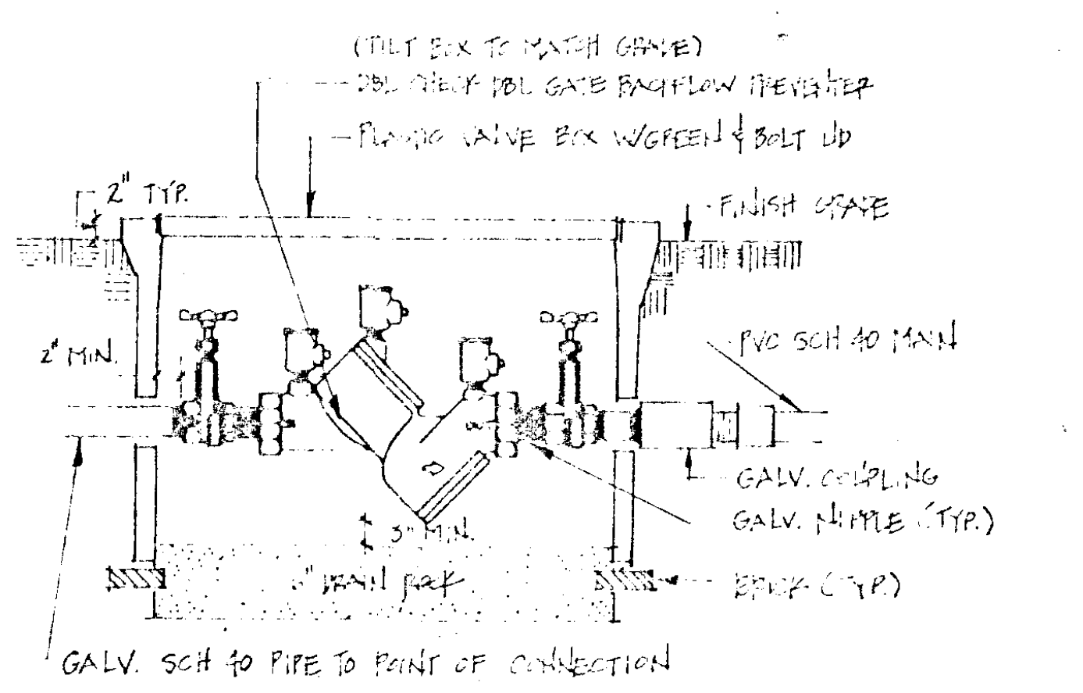
Ⓐ TREE PLANTING AND STAKING



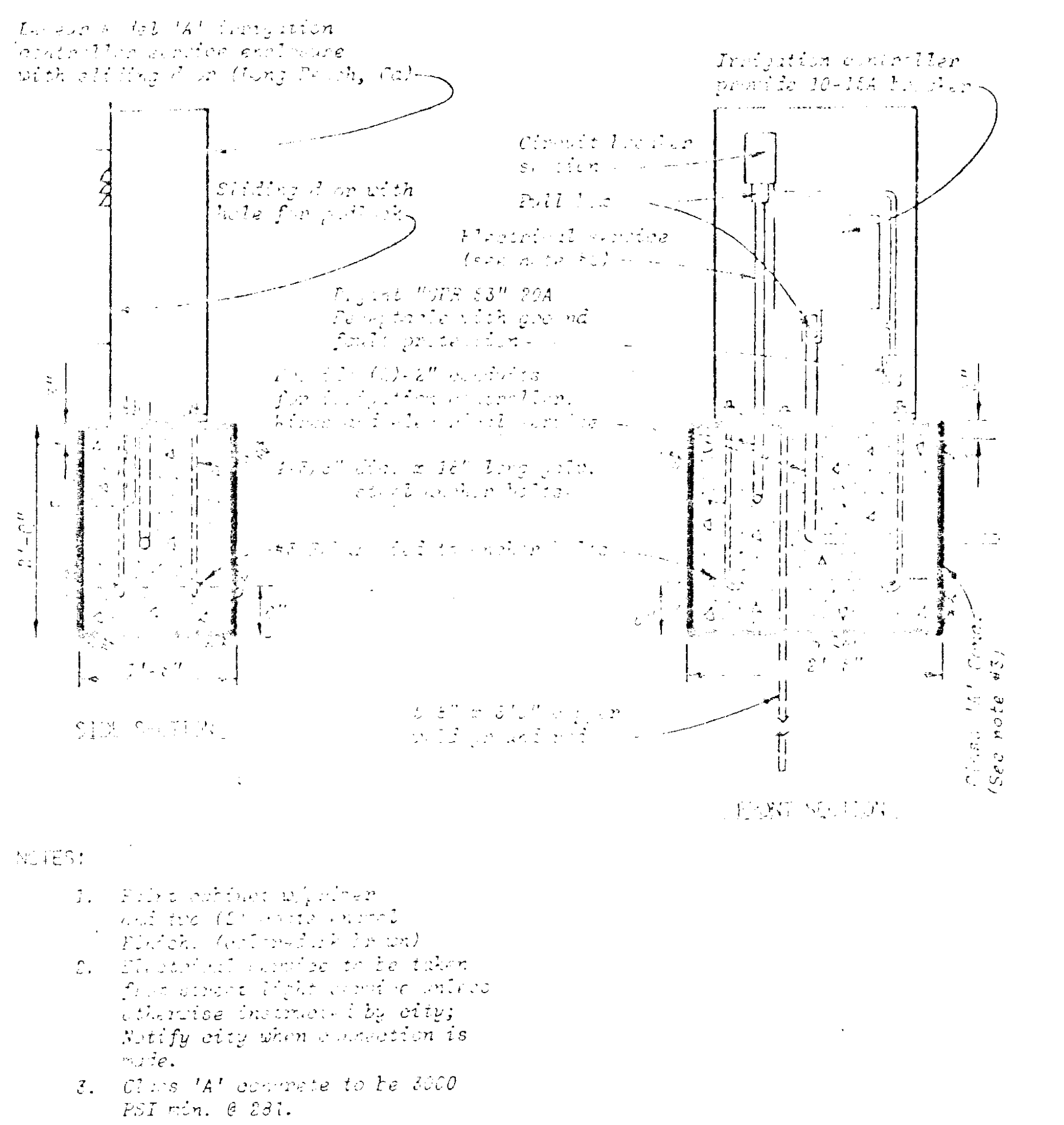
Ⓑ SHRUB PLANTING


SAND OR APPROVED FILL
LATERAL
SAND OR APPROVED FILL
24"
16"
24"
MAIN SUPPLY
24 V WIRING
PAVING
24"
SLEEVE
TRENCHES UNDER PAVING TO BE BACKFILLED WITH SAND. COMPACT ... 90% ... COMPACTION.
NOTE: TAPE & BUNDLE 24 V. CONDUCTORS @ 10' INTERVALS.

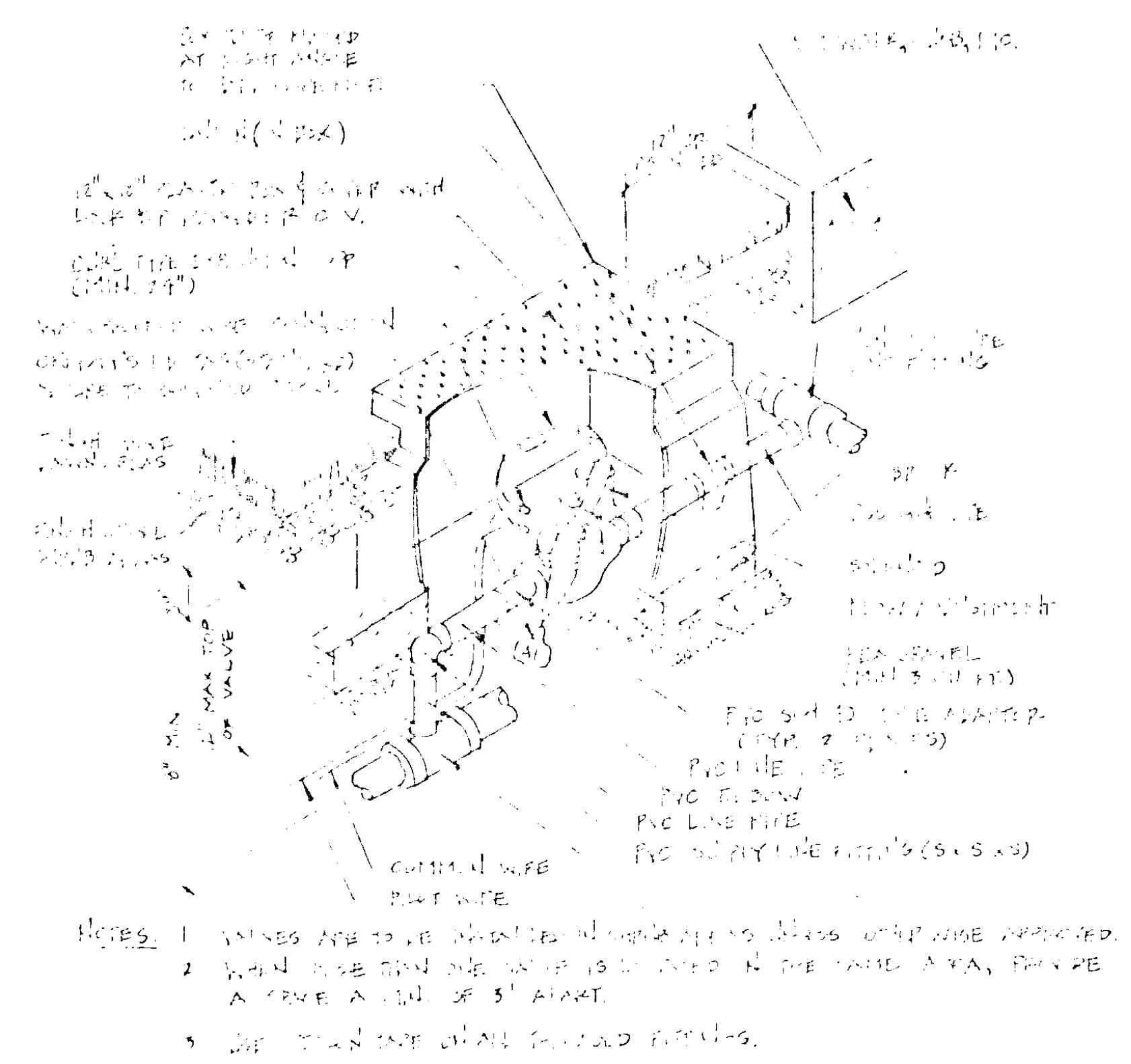
Ⓒ TRENCHING DETAIL


(TILT BOX TO MATCH GRADE)
DBL CHECK DBL GATE BACKFLOW PREVENTER
PLASTIC VALVE BOX W/GREEN & BOLT UP
2" TYP.
FINISH GRADE
2" MIN.
PVC SCH 40 MAIN
GALV. COUPLING
GALV. NIPPLE (TYP.)
3" MIN.
6" DRAIN ROCK
BRICK (TYP.)
GALV. SCH 40 PIPE TO POINT OF CONNECTION

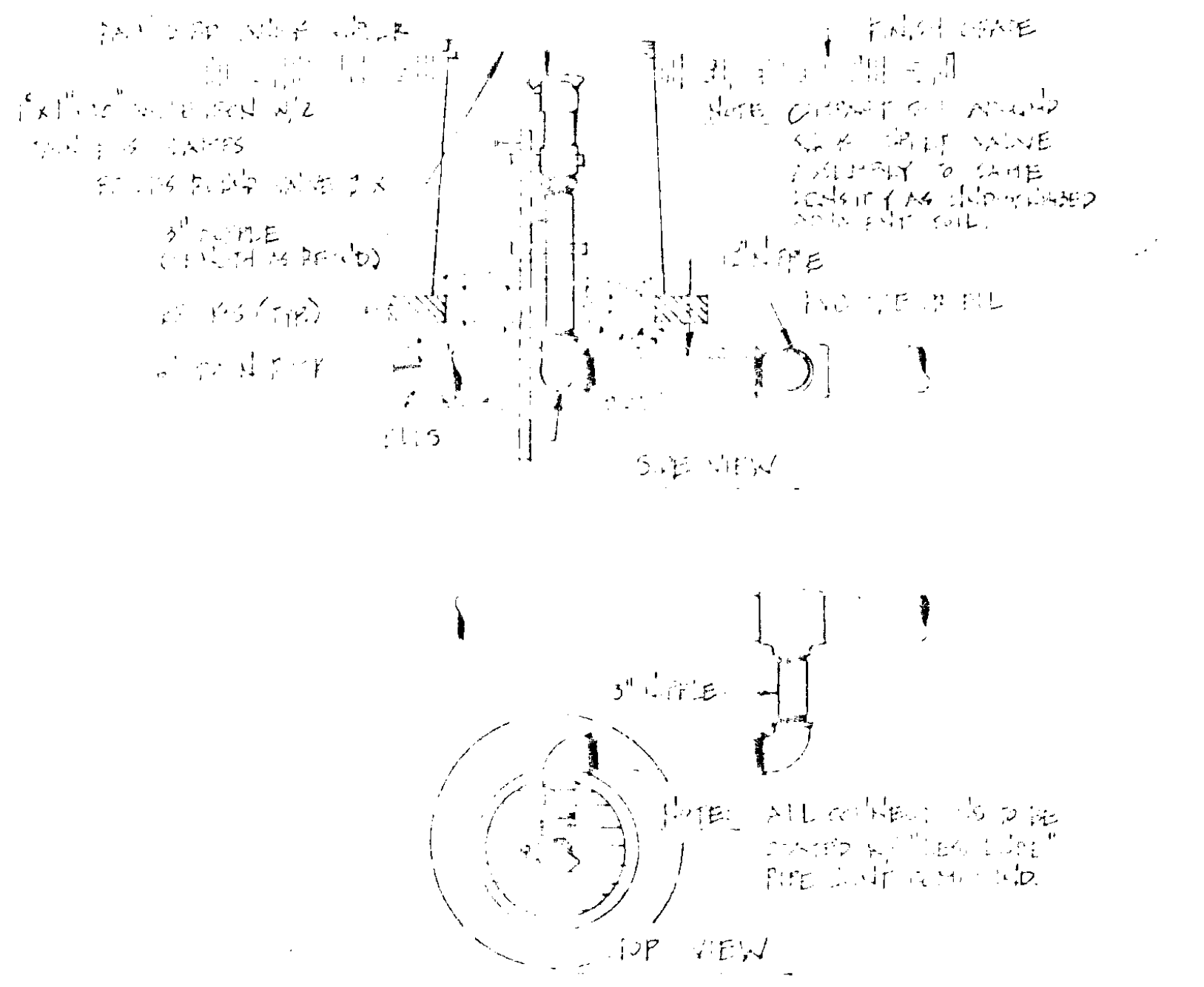
Ⓓ BACKFLOW PREVENTER



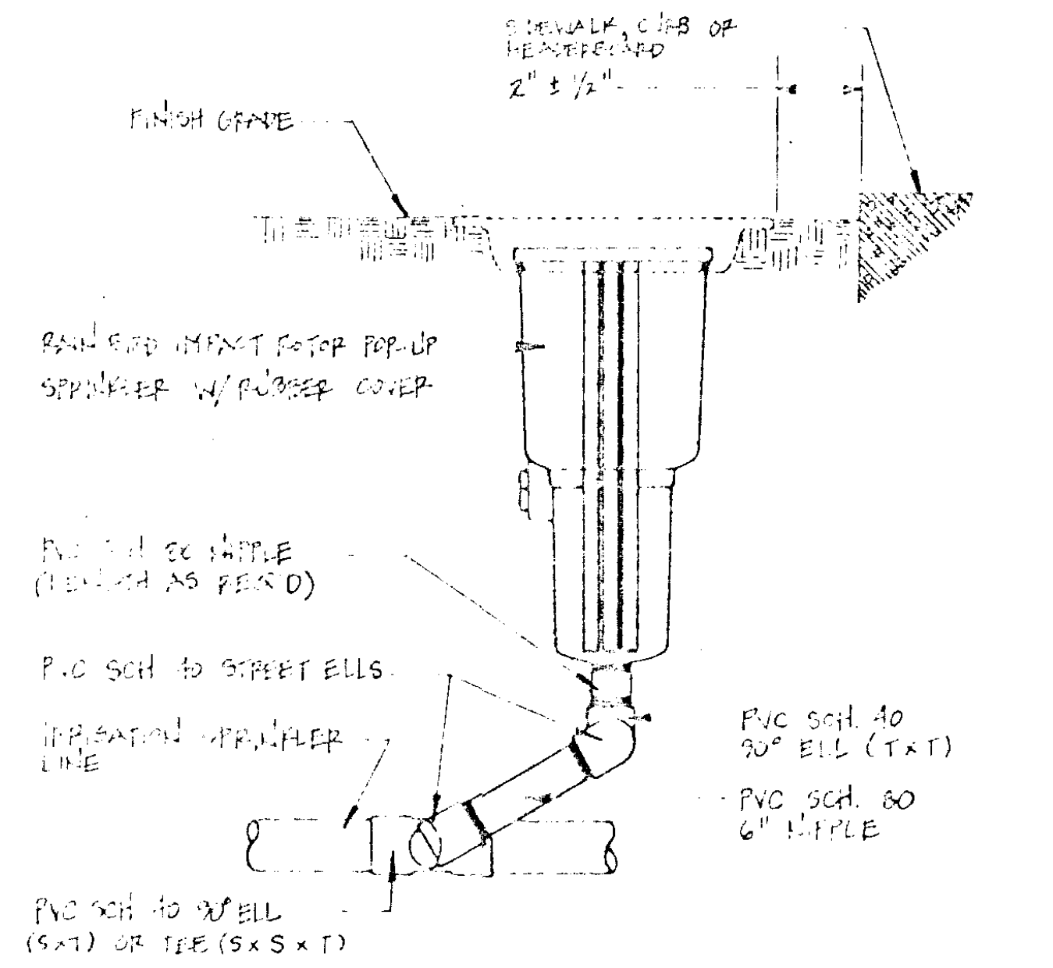
Ⓔ CONTROLLER DETAIL



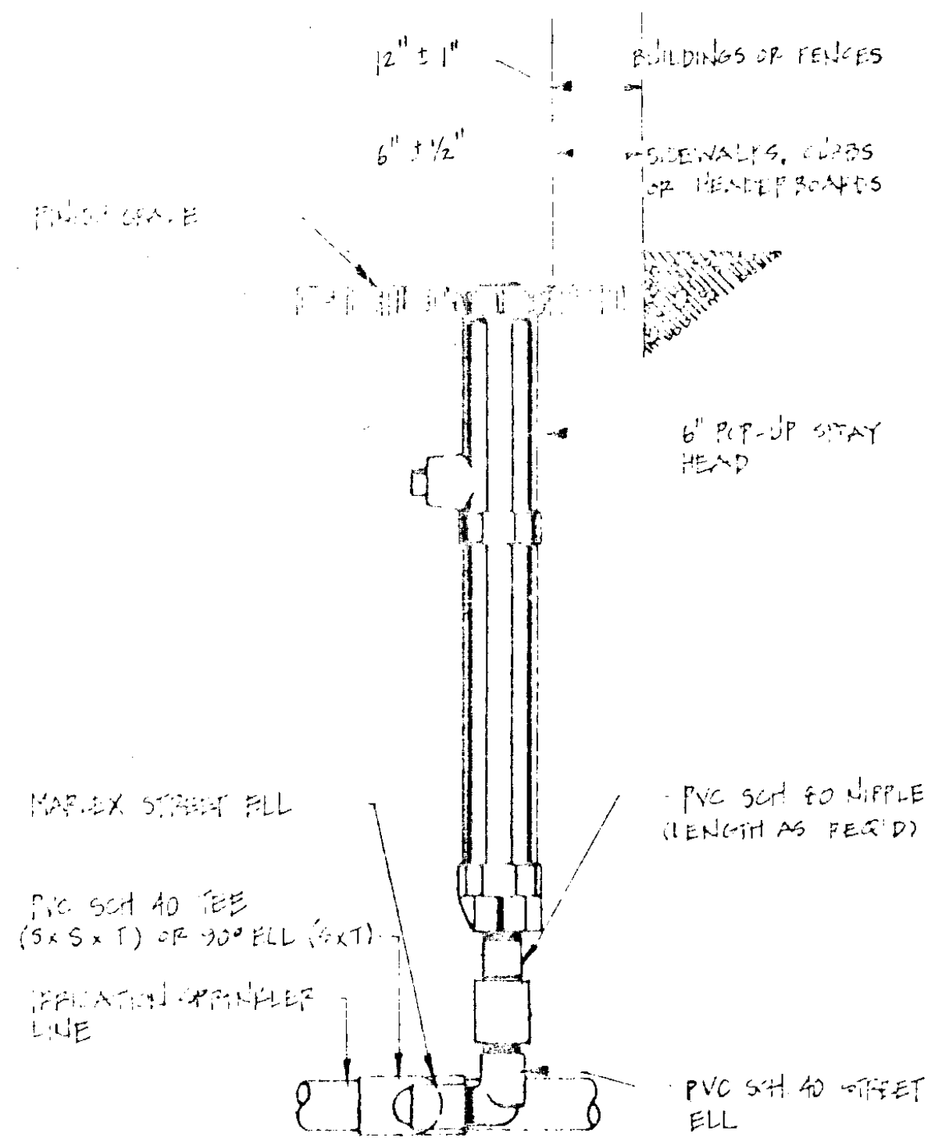
Ⓕ TYPICAL REMOTE CONTROL VALVE ASSEMBLY



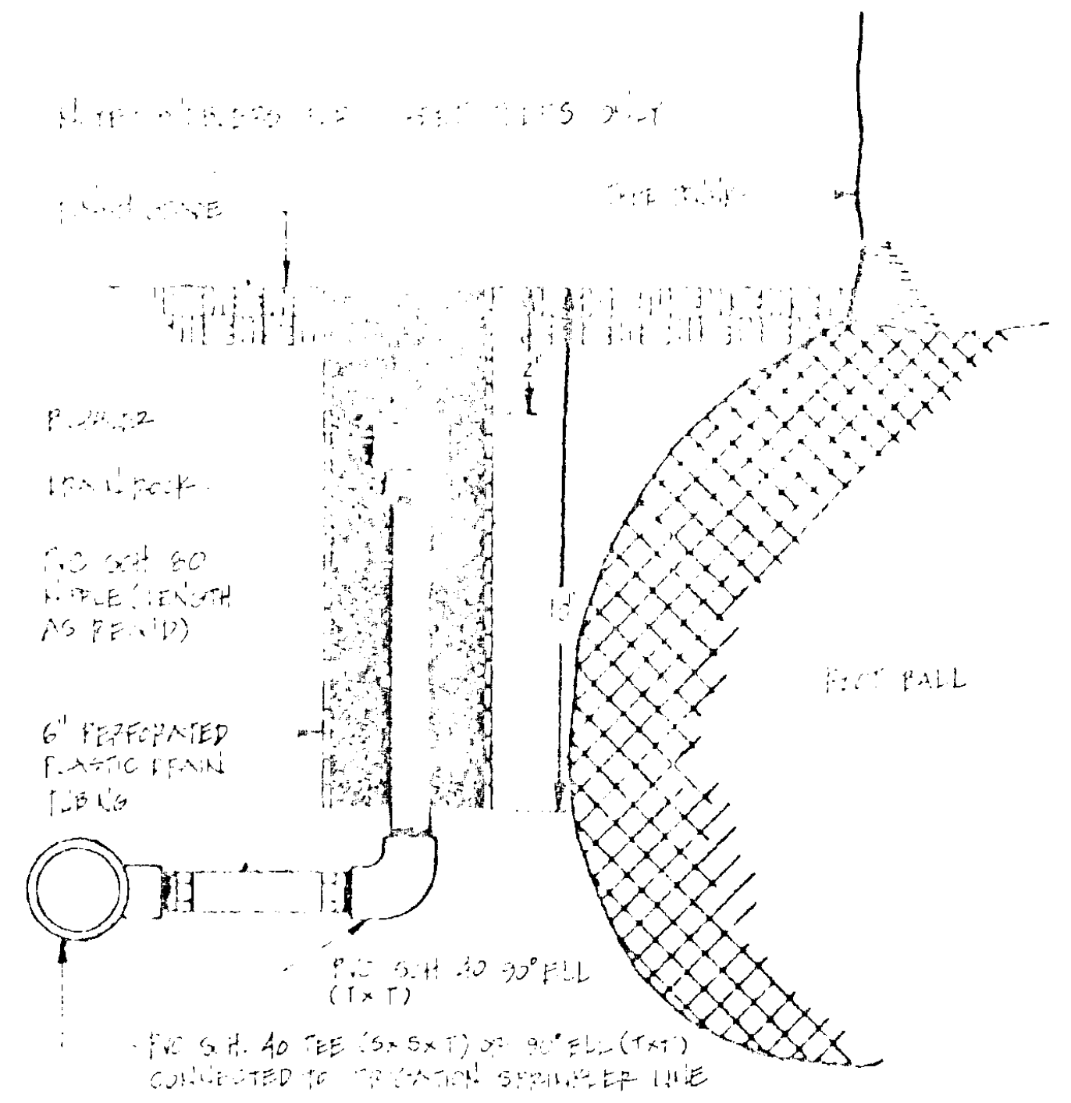
Ⓖ QUICK COUPLER VALVE DETAIL



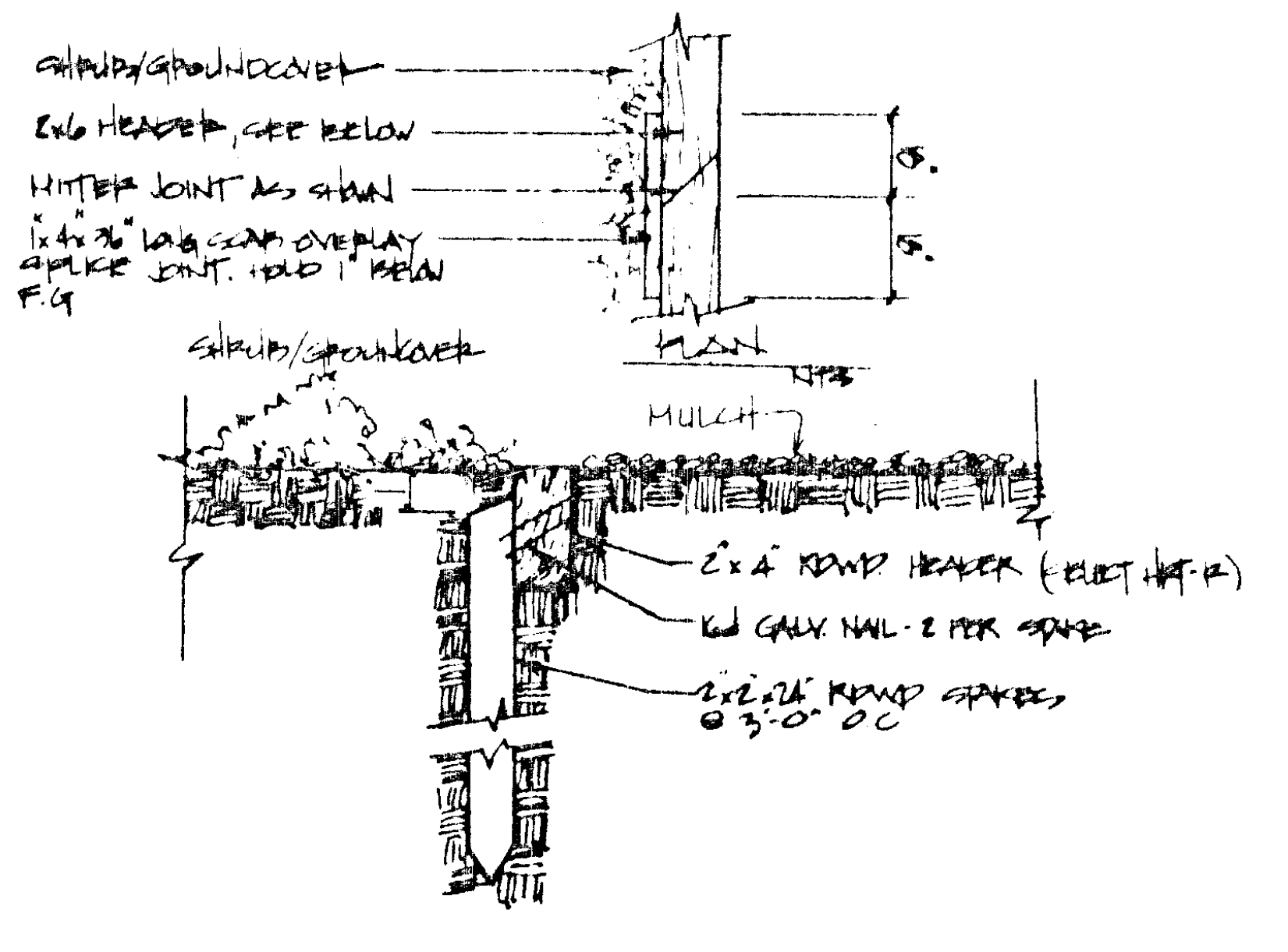
Ⓗ ROTOR POP-UP RISER ASSEMBLY DETAIL



Ⓘ 6" POP-UP SPRAY HEAD RISER ASSEMBLY DETAIL



Ⓙ BUBBLER RISER ASSEMBLY BELOW GRADE


SHRUB/GROUNDCOVER
2x6 HEADER, SEE BELOW
MITER JOINT AS SHOWN
1"x4"x36" LONG SCAB OVERLAY SPLICE JOINT. HOLD 1" BELOW F.G
PLAN
NTS
SHRUB/GROUNDCOVER
MULCH
2"x4" RDWD HEADER (SELECT HRT-R)
6d GALV. NAIL - 2 PER STAKE
2"x2"x24" RDWD STAKES @ 3'-0" O.C.

NOTE:
ALL TREE WELLS TO HAVE [illegible] MULCH AS PER SPECIFICATIONS.

Ⓚ REDWOOD HEADER

DRWN. GF
CHKD. GNC
LA

RUTH AND GOING, INC.
Civil Engineering Land Surveying

JOB # 17273-182

James N. Simpson 3-24-88
JAMES N. SIMPSON CA. LANDSCAPE ARCHITECT LIC. 2098 EXPIRES 1-31-90 DATE

Santa Clara Valley Water District

ACCEPTED BY DISTRICT: DATE 5/25/88

PROJECT ENGINEER RCE NO 25413 Bruce Wilson DIVISION ENGINEER RCE NO 15817

REVISION	DATE	DESCRIPTION	BY	BY

DESIGNED
DRAWN
CHECKED
SUBMITTED
DATE APPROVED

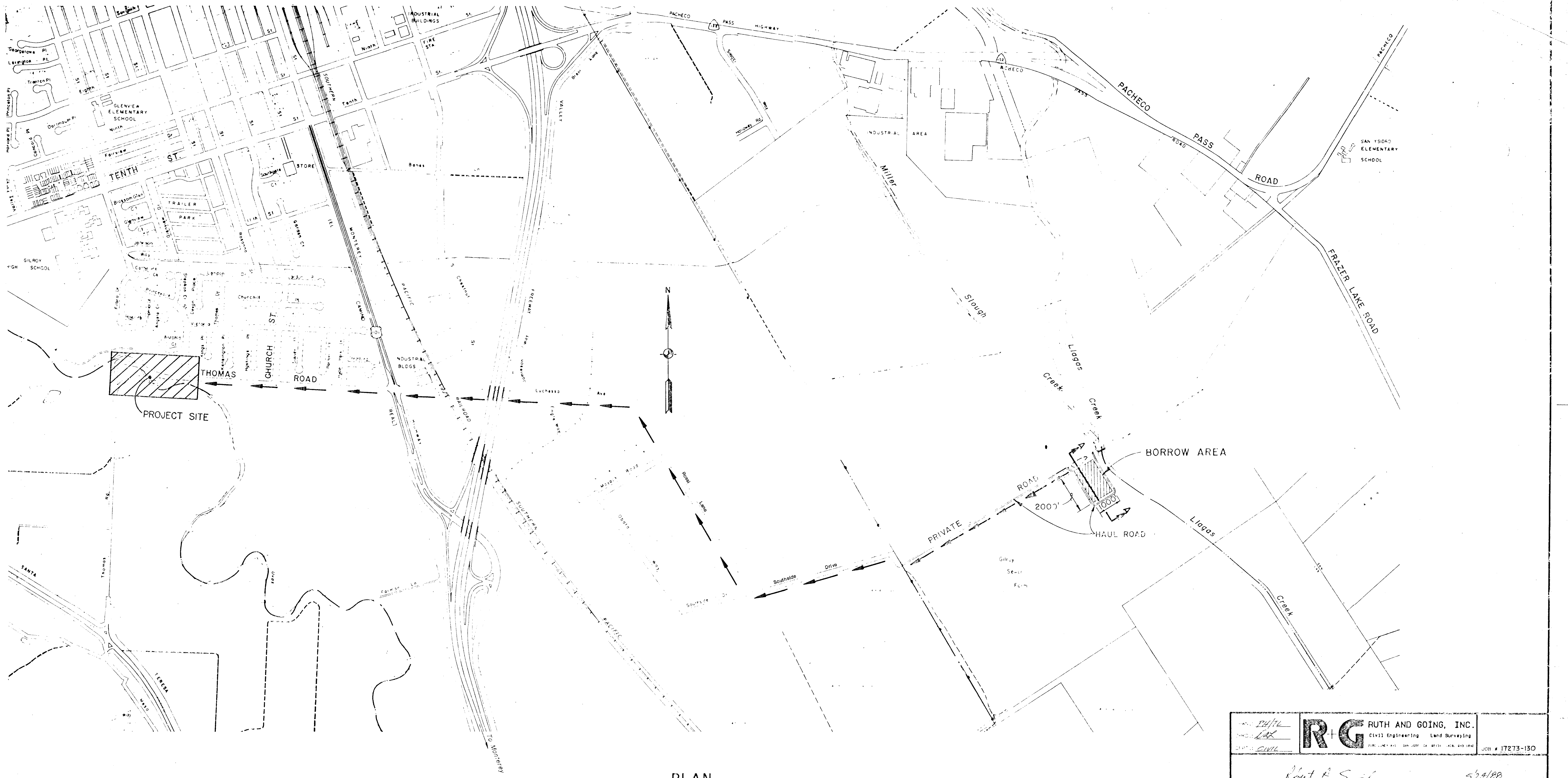
THOMAS ROAD AT UVAS CREEK
DETAILS

SCALE AS SHOWN
SPEC No
SHEET 47
FILE No

JAMES N. SIMPSON No. 2098

SANTA CLARA_CA Work Maps
SANTA CLARA_CA0277

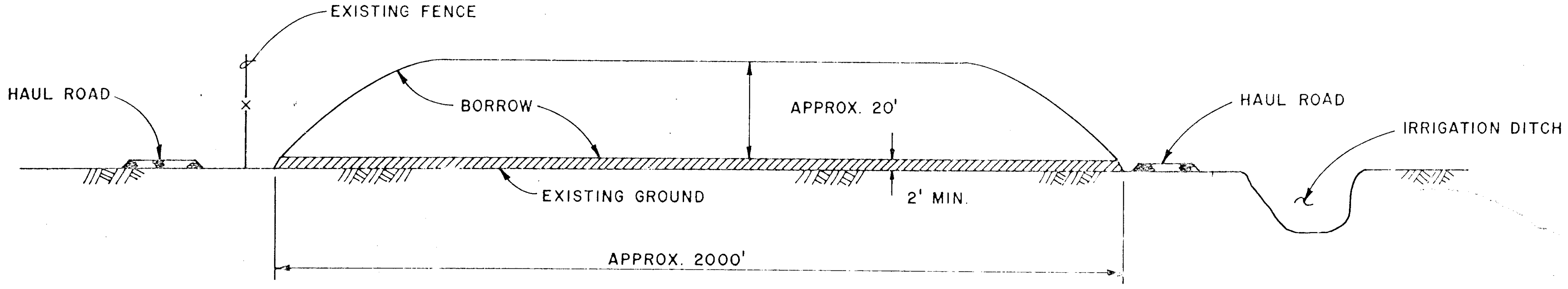
AERO-GEODETIC CORPORATION
CONSULTING PHOTOGRAMMETRIC ENGINEERS



PLAN
NOT TO SCALE

NOTES

1. CONTRACTOR TO USE HAUL ROUTE AS INDICATED. HAUL ROUTE ON OTHER ROADS AT CONTRACTOR'S DISCRETION, SUBJECT TO OBTAINING LOCAL PERMITS AS REQUIRED.



SECTION (A/—)
NOT TO SCALE

DSGN: PH/TL
CHKD: CAL
DEPT: CIVIL

RUTH AND GOING, INC.
Civil Engineering Land Surveying
2180 LUNDY AVE SAN JOSE CA 95131 (408) 943-1840

JOB # 17273-130

Robert A. Smith 5/24/88
ROBERT A. SMITH RCE 20821 EXP. 9-30-89 DATE:

Santa Clara Valley Water District

ACCEPTED BY DISTRICT: DATE 5/25/88

PROJECT ENGINEER RCE NO 25413
Bruce Wilson DIVISION ENGINEER RCE NO 15851

REVISION	DATE	DESCRIPTION	BY	
△				
△				

DEPARTMENT OF THE ARMY
SACRAMENTO DISTRICT, CORPS OF ENGINEERS
SACRAMENTO, CALIFORNIA

DESIGNED
DRAWN
CHECKED

THOMAS ROAD AT UVAS CREEK LOCATION OF BORROW AREA AND HAUL ROUTE

SUBMITTED
DATE APPROVED
SCALE AS SHOWN
SPEC No
SHEET 48
FILE No

ENVIRONMENTAL ENHANCEMENT THRU ENGINEERING

AERO-GEODETIC CORPORATION
CONSULTING PHOTOGRAMMETRIC ENGINEERS

SANTA CLARA_CA Work Maps
SANTA CLARA_CA0278

ENVIRONMENTAL ENHANCEMENT THRU ENGINEERING

Project: THOMAS ROAD BRIDGE
Gilroy, California

Log of Boring No. 1

Date Drilled: August 17, 1987 Remarks: East Abutment
Type of Boring: 6-inch Auger
Hammer: 140 lbs

Surface Elevation: 205.5 ± ft

Depth Ft.	Samples	Blows/Ft	MATERIAL DESCRIPTION	Moisture Content, %	Dry Density pcf	Unconfined Compress. Strength, psf
	1	27	SILTY CLAY (CL) Hard, damp to moist, dark brown with traces of roots Becoming more sandy	15	107	12490
5	2	23	SANDY CLAY (CL) Hard, damp, brown, with sand and traces of rootlets, slightly pitted	10	115	15660
10	3	29		10	113	10200
15	4	23	Becoming more sandy with interbeds of sand (SC-SM) Very stiff, dark brown +#4 = 0% -#200 = 51%	13	108	7680
20	5	24		11	117	6330
25	6	27	SILTY SAND (SM-SC) Medium dense, moist, gray with rust brown mottling and traces of fine gravel +#4 = 12% -#200 = 19%	11	119	2720
30			CLAYEY SAND (SC) Medium dense, moist, brown mottled with rust and reddish-brown, with interbedded clayey and gravelly zones			

Project: 8715013R | Woodward-Clyde Consultants | Figure 4a

Project: THOMAS ROAD BRIDGE
Gilroy, California

Log of Boring No. 2

Date Drilled: August 17, 1987 Remarks: UVAS Creek Channel
Type of Boring: 6-inch Auger
Hammer: 140 lbs

Surface Elevation: 188.5 ± ft

Depth Ft.	Samples	Blows/Ft	MATERIAL DESCRIPTION	Moisture Content, %	Dry Density pcf	Unconfined Compress. Strength, psf
	1	12	SILTY SAND (SM) Medium dense, damp, brown, with gravel and cobbles			
5	2	20	SANDY CLAY (CL) Stiff, moist, reddish brown to dark brown with dark gray mottling, with traces of decomposed roots and with gravel up to 1/2 inch diameter	17	114	3670
10	3	46	SILTY CLAY (CL) Very stiff, moist, brown with olive gray mottling, with traces of gravel	21	109	7910
15	4	68	GRAVELLY CLAY (CL-GC) Stiff, moist, reddish brown with some yellow mottling, with sandy and very gravelly zones	22 17	107 116	3760 -
20	5	34	After Drilling			
25	6	58	ATD With rock fragments up to 2 inch diameter	17	115	2820
30			SILTY CLAY (CL) Stiff to very stiff, moist, light brown-gray, with some sand and fine gravel			

Project: 8715013R | Woodward-Clyde Consultants | Figure 5a

Project: THOMAS ROAD BRIDGE
Gilroy, California

Log of Boring No. 3

Date Drilled: August 17, 1987 Remarks: UVAS Creek Channel
Type of Boring: 6-inch Auger
Hammer: 140 lbs

Surface Elevation: 188.5 ± ft

Depth Ft.	Samples	Blows/Ft	MATERIAL DESCRIPTION	Moisture Content, %	Dry Density pcf	Unconfined Compress. Strength, psf
	1	27	SILTY SAND (SM) Medium dense, damp, gray-brown, with coarse gravel and cobbles and some roots			
5	2	24	SANDY SILTY CLAY (CL) Stiff, moist, reddish brown with light gray mottling, with fine gravel Becoming more gravelly	18	113	3210
10	3	62	SANDY CLAY (CL) Hard, moist, gray and brown with some black mottling and with some gravel	22	106	9410
15	4	52	CLAYEY SAND (SC) TO CLAYEY GRAVEL (GC-CL) Dense to very dense, brown to reddish brown with gravel up to 1-1/2 inch diameter ATD			
20	5	46		11	130	
25	6	65	+#4 = 42% -#200 = 15%	12	128	1070
30						

Project: 8715013R | Woodward-Clyde Consultants | Figure 6a

Project: THOMAS ROAD BRIDGE
Gilroy, California

Log of Boring No. 4

Date Drilled: August 17, 1987 Remarks: West Abutment
Type of Boring: 6-inch Auger
Hammer: 140 lbs

Surface Elevation: 205.0 ± ft

Depth Ft.	Samples	Blows/Ft	MATERIAL DESCRIPTION	Moisture Content, %	Dry Density pcf	Unconfined Compress. Strength, psf
	1	21	SILTY CLAY (CL) Very stiff, dry to damp, dark brown, with traces of roots	15	93	7730
5	2	53	Becoming hard, with some rock fragments	11	117	10840
10	3	79/ 10"	SILTY CLAY (CL) Hard, damp to moist, reddish brown with dark brown mottling, and with some sand			
15	4	84/ 11"	Hard, damp	19	112	24030
20	5	84	CLAYEY SAND (SC) TO CLAYEY GRAVEL (GC) Very dense, damp to moist, yellow and reddish brown with gravel up to 1 inch diameter +#4 = 42% -#200 = 17%	10	122	
25	6	30	GRAVELLY CLAY (CL) Stiff, moist, reddish brown with some coarse sand	16	119	2380
30						

Project: 8715013R | Woodward-Clyde Consultants | Figure 7a

BORING LOG LEGEND

▨	2-INCH I.D. MODIFIED CALIFORNIA SAMPLER
▤	2-INCH O.D. STANDARD SPLIT-SPOON SAMPLE
▭	BLOW COUNT WITH 140-lb. HAMMER FALLING 30"

WATER LEVEL MEASURED: ▽

ATD	AT TIME OF DRILLING
24 hrs.	TIME AFTER DRILLING COMPLETED

Project: THOMAS ROAD BRIDGE
Gilroy, California

Log of Boring No. 1 (Continued)

Depth Ft.	Samples	Blows/Ft	MATERIAL DESCRIPTION	Moisture Content, %	Dry Density pcf	Unconfined Compress. Strength, psf
	7	39	CLAYEY SAND (SC) TO GRAVELLY CLAY (GC-CL) ..... Continued Becoming more gravelly, (GC-CL), with gravel up to 1 inch diameter			
35	8	39	More reddish brown	15	.111	2360
40	9	33		19	112	[illegible]
			BOTTOM OF BORING AT 41-1/2 FT Dry at time of drilling			
45						

Project: THOMAS ROAD BRIDGE
Gilroy, California

Log of Boring No. 2 (Continued)

Depth Ft.	Samples	Blows/Ft	MATERIAL DESCRIPTION	Moisture Content, %	Dry Density pcf	Unconfined Compress. Strength, psf
	7	49	SILTY CLAY (CL) ..... Continued	21	108	5950
35	8	90	SILTY SANDY CLAY (CL) Hard, moist, reddish brown, with sand and gravel up to 1 inch diameter Becoming more gravelly	21	108	10330
40	9	59				
			BOTTOM OF BORING AT 41-1/2 FT			
45						
50						

NOTE: Boring 2 was advanced to a depth of 41-1/2 ft using a 6-inch diameter solid flight auger. An additional boring was advanced to a depth of about 10 ft using a 12-inch diameter solid flight auger at a location 5 ft north of the original boring location to verify the depth and extent of bedload materials encountered in the creek channel.

Project: THOMAS ROAD BRIDGE
Gilroy, California

Log of Boring No. 3 (Continued)

Depth Ft.	Samples	Blows/Ft	MATERIAL DESCRIPTION	Moisture Content, %	Dry Density pcf	Unconfined Compress. Strength, psf
	7	75	CLAYEY SAND (SC) TO CLAYEY GRAVEL (GC-CL) ..... Continued			
35	8	56		17	119	2670
			Becoming more gravelly			
40	9	80				
			BOTTOM OF BORING AT 41-1/2 FT			
45						
50						

NOTE: Boring 3 was advanced to a depth of 41-1/2 ft using a 6-inch diameter solid flight auger. An additional boring was advanced to a depth of about 10 ft using a 12-inch diameter solid flight auger at a location 5 ft north of the original boring location to verify the depth and extent of bedload materials encountered in the creek channel.

Project: THOMAS ROAD BRIDGE
Gilroy, California

Log of Boring No. 4 (Continued)

Depth Ft.	Samples	Blows/Ft	MATERIAL DESCRIPTION	Moisture Content, %	Dry Density pcf	Unconfined Compress. Strength, psf
	7	23	GRAVELLY CLAY (CL) ...... Continued Less gravelly After Drilling ATD	22	105	-
35	8	21		16	118	2770
40	9	27		27	100	2370
			BOTTOM OF BORING AT 41-1/2 FT			
45						

FIELD EXPLORATION

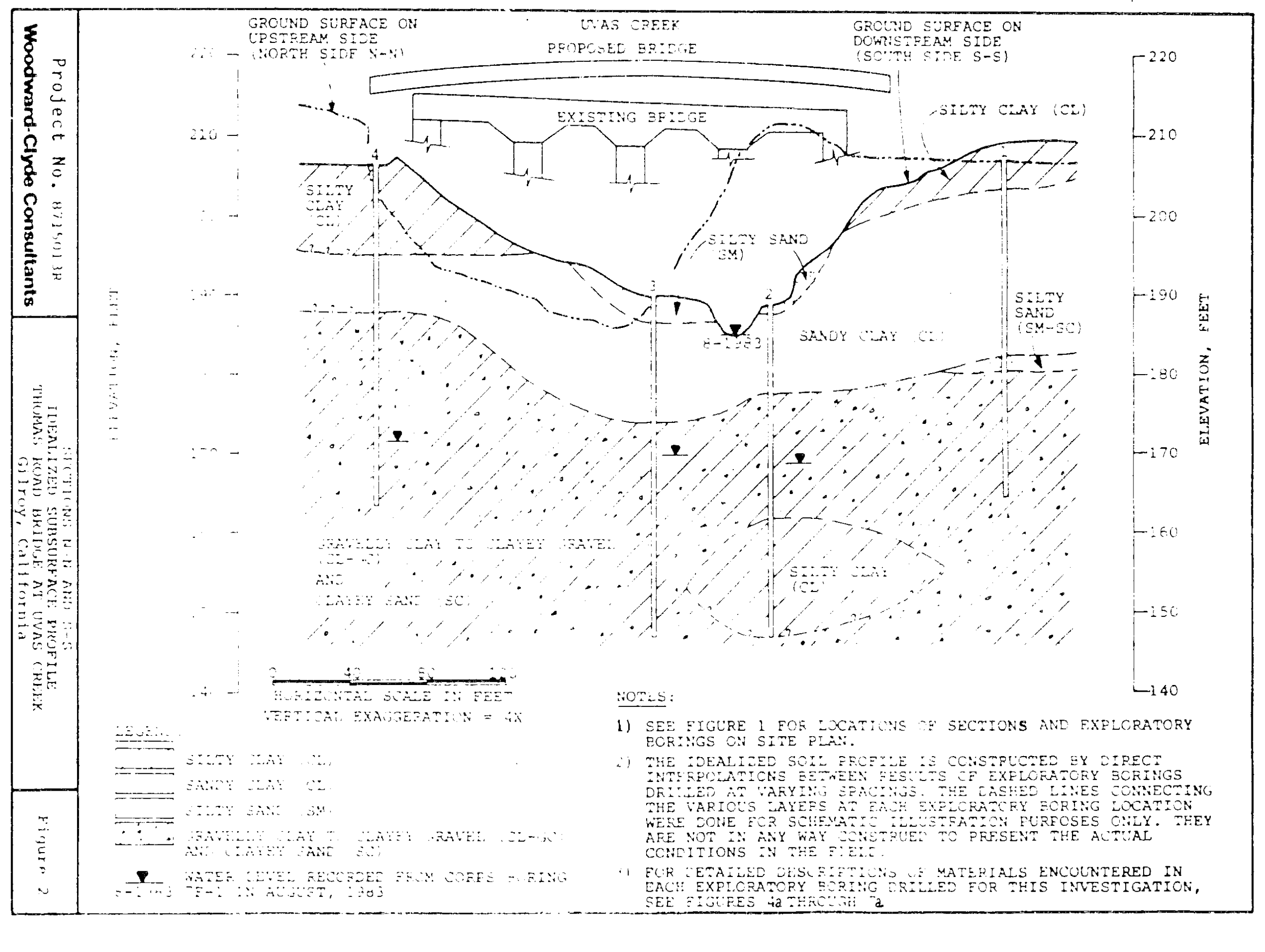
Four (4) sampled exploratory borings were drilled in the vicinity of the proposed bridge alignment to supplement the available subsurface information in an earlier investigation conducted by the Corps of Engineers in the area. The exploratory borings were advanced to a depth of 41-1/2 feet using a 6 inch diameter solid flight power auger. In addition, two probe borings were advanced to a depth of about 10 feet using a 12 inch diameter solid flight auger at locations approximately 5 feet north of Borings 2 and 3 to verify the depth and extent of soft and/or bedload materials in the creek channel. The locations of the borings are shown on the attached Site and Boring Location Plan, Figure 1. The drilling was done on August 17, 1987, under the supervision of a representative of Woodward-Clyde Consultants. Visual classifications of the soils encountered were made from the cuttings at the time of drilling. Samples of the underlying soils were obtained using either a modified California drive sampler (2 inch inside diameter and 2-1/2 inch outside diameter) or a standard split-spoon sampler (1-3/8 inch inside diameter and 2 inch outside diameter). The modified California sampler and split-spoon sampler were driven into the soil with a 140 pound hammer falling freely through 30 inches.

When the samplers were withdrawn from the hole, the samples were carefully removed, sealed to prevent moisture loss and returned to our laboratory for testing. Soil classifications made in the field were verified in the laboratory after further examination and testing. The attached Boring Log Legend Sheet, Figure 3, illustrates the notation used for the types of samplers and methods of advancing them, as presented on the Logs of Borings, Figures 4 through 7. The Logs of Borings by the Corps of Engineers are presented on Figures 8 and 9.

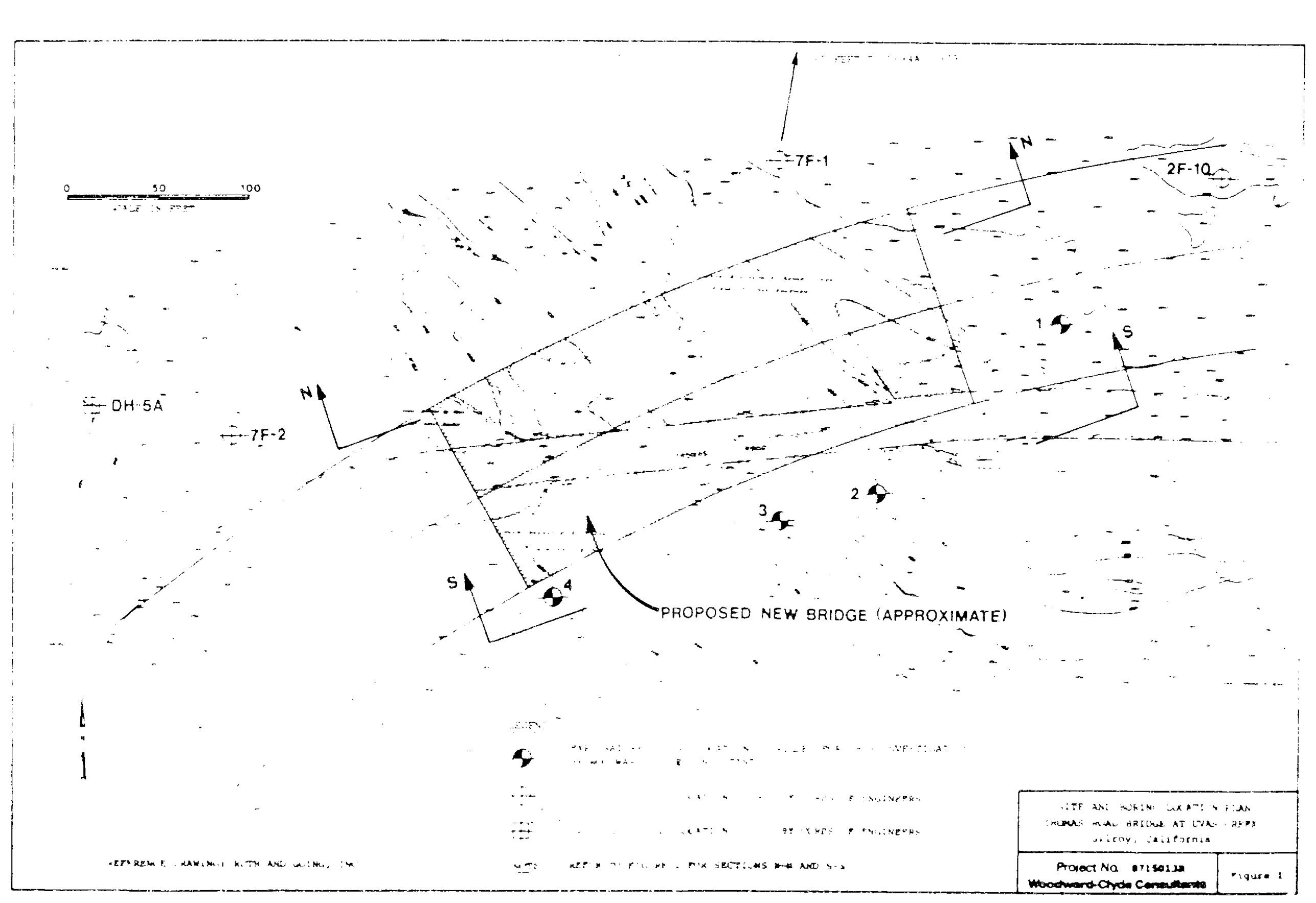
LABORATORY TESTS

The water content, dry density and unconfined compressive strength were determined for selected samples to estimate the strength and compressiblity of the underlying soils. The results of these tests, together with the resistance to penetration of the sampler are shown at the corresponding sample locations on the Logs of Borings.

Grain size distrubitions were determined for selected samples of the sand, gravel and sandy clay deposits. The results of these tests are presented graphically on Figures 10 and 11.


Project No. 8715013R
Woodward-Clyde Consultants
SECTIONS N-N AND S-S
IDEALIZED SUBSURFACE PROFILE
THOMAS ROAD BRIDGE AT UVAS CREEK
Gilroy, California
Figure 2
GROUND SURFACE ON UPSTREAM SIDE (NORTH SIDE N-N)
UVAS CREEK
PROPOSED BRIDGE
GROUND SURFACE ON DOWNSTREAM SIDE (SOUTH SIDE S-S)
EXISTING BRIDGE
SILTY CLAY (CL)
SILTY SAND (SM)
SILTY SAND (SM-SC)
SANDY CLAY (CL)
8-1983
GRAVELLY CLAY TO CLAYEY GRAVEL (CL-GC) AND CLAYEY SAND (SC)
SILTY CLAY (CL)
220
210
200
190
180
170
160
150
140
ELEVATION, FEET
0
40
80
120
HORIZONTAL SCALE IN FEET
VERTICAL EXAGGERATION = 4X
LEGEND:
SILTY CLAY (CL)
SANDY CLAY (CL)
SILTY SAND (SM)
GRAVELLY CLAY TO CLAYEY GRAVEL (CL-GC) AND CLAYEY SAND (SC)
WATER LEVEL RECORDED FROM CORPS BORING 7F-1 IN AUGUST, 1983

NOTES:
1) SEE FIGURE 1 FOR LOCATIONS OF SECTIONS AND EXPLORATORY BORINGS ON SITE PLAN.
2) THE IDEALIZED SOIL PROFILE IS CONSTRUCTED BY DIRECT INTERPOLATIONS BETWEEN RESULTS OF EXPLORATORY BORINGS DRILLED AT VARYING SPACINGS. THE DASHED LINES CONNECTING THE VARIOUS LAYERS AT EACH EXPLORATORY BORING LOCATION WERE DONE FOR SCHEMATIC ILLUSTRATION PURPOSES ONLY. THEY ARE NOT IN ANY WAY CONSTRUED TO PRESENT THE ACTUAL CONDITIONS IN THE FIELD.
3) FOR DETAILED DESCRIPTIONS OF MATERIALS ENCOUNTERED IN EACH EXPLORATORY BORING DRILLED FOR THIS INVESTIGATION, SEE FIGURES 4a THROUGH 7a.



Santa Clara Valley Water District

ACCEPTED BY DISTRICT DATE 5/25/88

Tony [illegible] PROJECT ENGINEER R.C.E. NO. 25413
Bruce Wilson DIVISION ENGINEER R.C.E. NO. 10881

REVISION	DATE	DESCRIPTION	BY

DESIGNED
DRAWN
CHECKED

THOMAS ROAD AT UVAS CREEK
SOIL BORING LOGS

SUBMITTED
DATE APPROVED
SCALE AS SHOWN
SPEC. NO.
SHEET 49
FILE NO.

SANTA CLARA_CA Work Maps
SANTA CLARA_CA00279

AERO-GEODETIC CORPORATION

TAB 6

Schaaf & Wheeler
CONSULTING CIVIL ENGINEERS

100 N. Winchester Blvd., Suite 200
Santa Clara, CA 95050
(408) 246-4848
FAX (408) 246-5624
canderson@swsv.com

TECHNICAL MEMORANDUM

PROJECT:	Recertification of Provisionally Accredited Levee P0 in Gilroy, California	DATE:	May 22, 2009
PREPARED:	Charles D. Anderson, P.E.	JOB #:	SCVW.18.08-001A4
SUBJECT:	Freeboard Evaluation for North Bank Levee on Uvas Creek in Gilroy		

The Santa Clara Valley Water District (District) has co-signed a PAL agreement to re-certify the levee on the northern side of Uvas Creek within the City of Gilroy (City) and unincorporated Santa Clara County (County). The District, City and County are participating in FEMA's Map Modernization Program (MapMod) to reflect the current reality of the natural and man-made environments as they relate to flood hazards. The ultimate goal is to provide updated maps that support a flood insurance program properly aligned with actual risk. Access to accurate maps enhances community-based floodplain decisions, provides jurisdictional agencies with the proper tools for floodplain management and provides local property owners with meaningful flood risk data so they may make informed decisions.

District, City and County participation in MapMod includes the accreditation of District levees that provide protection from the base flood, that is, the one-percent (1%) annual chance flood also referred to as the "100-year flood." Certain levees believed to meet federal standards for levee performance – as listed in the Code of Federal Regulations, Title 44, Section 65 (44 CFR §65) – are thought to be eligible as Provisionally Accredited Levees (PAL) and are currently shown as providing one-percent flood protection on Flood Insurance Rate Maps (FIRMs).

To receive FEMA accreditation, the levee must be shown to conform to the requirements of 44 CFR §65.10 as indicated by the terms of the Provisionally Accredited Levee Program (PAL):

> "To the best of [the District's, City's and County's] knowledge the [subject] levee…meets the requirements of 44 CFR 65.10 and has been maintained in accordance with an adopted operation and maintenance plan and records of levee maintenance and operation, as well as tests of the mechanized interior drainage system if applicable….."

The purpose of this memorandum is to provide documentation that ***the subject levee meets federal standards for levee performance relative to freeboard*** as described in 44 CFR 65.10. This documentation is provided as part of a submittal package to FEMA that demonstrates the Uvas Creek levee meets all NFIP standards for levee certification.

Limits of Levee Freeboard Evaluation

Provisionally Accredited Levee P0 is located on the northern bank of Uvas Creek in Gilroy, and was constructed by the United States Army Corps of Engineers (USACE) in 1988. The levee extends from an upstream limit at Laurel Drive (about 1,100 feet downstream of Santa Teresa Boulevard Bridge) to about 2,100 feet downstream of Thomas Road Bridge (also known as Luchessa Avenue). The approximate total length of levee is 11,500 feet or 2.2 miles.

It may be noted that immediately downstream of the levee, the one-percent discharge spills over the left and right creek banks. These spills decreases the peak flow conveyed in the creek channel. This condition is described in more detail in the ‘Methodology’ section of this memorandum. Between the upstream limit of the levee and Santa Teresa Boulevard Bridge, the one-percent discharge is contained in the creek channel.

Limits of Hydraulic Evaluation

To compute levee freeboard and ascertain whether NFIP standards for freeboard are met, a one-percent water surface profile for Uvas Creek has been calculated from immediately upstream of Santa Teresa Boulevard to the downstream face of the Highway 101 culvert. The water surface profile downstream of the levee is necessary to establish backwater conditions at the levee.

Sources of Data Used to Evaluate Levee Freeboard

The primary source of data used in this evaluation is a field survey of the Uvas Creek channel and levees from Santa Teresa Boulevard to Highway 101. This certified survey was undertaken in July and August 2008 by Ruggeri Jensen Azar & Associates (RJA). This field survey is the basis for most of the cross sections in the HEC-RAS model used for freeboard evaluation.

In addition to the RJA field survey, HEC-RAS cross sections were developed and extended as necessary based on field and LiDAR surveys performed by the District; particularly field surveys performed at bridge and culvert crossings. Schaaf & Wheeler has used these HEC-RAS sections in conjunction with the RJA survey and our own site reconnaissance to complete a hydraulic model for Uvas Creek from Highway 101 to Santa Teresa Blvd.

Freeboard Requirements

44 CFR 65.10 mandates that riverine levees provide a minimum freeboard of three feet above the water surface level of the base (one-percent) flood. An additional foot of freeboard (i.e. 4 feet of freeboard) is required within 100 feet of either side of structures such as bridges or wherever the flow is constricted. An additional one-half foot of freeboard above the minimum is required at the upstream end of the levee (i.e. 3.5 feet freeboard), tapering to not less than the minimum at the downstream end (i.e. 3 feet freeboard).

Methodology

To evaluate whether required freeboard above the base flood elevation is provided by the existing levee, an HEC-RAS model was prepared which reflects current conditions within the creek channel and our evaluation of relevant hydraulic parameters including channel roughness, bridge modeling, transition losses and boundary conditions. Subcritical flow computations have been made since there are no reach locations with supercritical flow. A levee must be certified to at least the base flow (i.e. 1% or 100-year discharge); however FEMA will allow levee certification to a greater flow. Per discussions with the District, Schaaf & Wheeler will ascertain if the levee meets freeboard requirements for the highest discharge possible above the effective base flow. A more detailed discussion of the ‘certifiable discharge’ is presented in the *Boundary Conditions* section of this report.

Channel Roughness

In one-dimensional open channel flow analysis as performed using HEC-RAS, a single parameter known as “Manning’s n” is used to represent the retarding forces to flow imposed by the channel bed and banks. Values for “n” are published in various literature – and in the absence of high water marks with which to calibrate stream reaches with known discharge (as is the case for Uvas Creek in the leveed condition) – are often relied upon for hydraulic modeling. When selecting roughness values, it is important to remember that in one-dimensional flow analysis, Manning’s “n” accounts for the flow resistance due to a host of hydraulic phenomena beyond boundary shear.

Several sources have been used to estimate roughness factors for water surface profile determination within Uvas Creek. These include “n” values published by Henderson (1966) and Chow (1959), engineering judgment, and procedures outlined by the USACE (EM 1110-2-1601, July 1991). Channel roughness considers the channel as if maintained in no worse than its present condition, evaluated as if it were the rainy season.

Roughness elements along the wetted perimeter of Uvas Creek can vary across an individual cross section. For instance the channel cross section might contain elements of grassed banks, mature trees, a floodplain bench, shrubs or brush, rip-rap, access areas and/or bare earth. To compute water surface elevations in a channel with variable roughness using a one-dimensional model (i.e. with a mean velocity), it is necessary to estimate an effective (composite) roughness value for each cross section. Flow velocities vary across the channel due to variation in both the flow depth and roughness from one channel element to the next. To calculate mean flow velocity without actually subdividing each channel section, several methods are suggested in the literature for estimating a composite roughness value within non-uniform channels.

HEC-RAS calculates a composite “n” value based (apparently) on an assumption that average velocities within each channel element are equal and equivalent to the mean channel velocity as a whole. (HEC, 1998) Since this may not necessarily be the case when there is a wide variation in roughness elements, several other methods for weighting “n” are considered and used to select roughness values based on judgment. Composite weighting generally involves breaking a representative reach cross section into elements that reflect cross sectional geometry and the various roughness characteristics, such as bed material, channel sinuosity, vegetation and obstructions. Roughness values for each element are estimated, and a weighting equation is used to obtain the equivalent roughness coefficient for that reach.

Lotter assumed that the total discharge in each section is equal to the sum of the discharges of individual areas subdivided by roughness (i.e. conservation of mass). The resultant equivalent roughness coefficient formula, consistent with US Army Corps of Engineers engineer manual EM 1110-2-1601, is provided by Chow as Equation 6-19:

$$\bar{n} = \frac{P\, R^{5/3}}{\sum_{1}^{N}\left(\frac{P_N\, R_N^{5/3}}{n_N}\right)} = \frac{P\, R^{5/3}}{\frac{P_1\, R_1^{5/3}}{n_1} + \frac{P_2\, R_2^{5/3}}{n_2} + \ldots + \frac{P_N\, R_N^{5/3}}{n_N}}$$

where $\bar{n}$ = composite roughness coefficient for cross section
P = total wetted perimeter of cross section (feet)
R = total hydraulic radius of cross section (feet)
P_i = wetted perimeter of cross section element i (feet)
R_i = hydraulic radius of cross section element i (feet)
N_i = Manning’s roughness coefficient for cross section element i

It could be assumed that the total force resisting the flow is equal to the sum of the forces resisting the flow developed in the subdivided areas (Pavlovskii, Muhlhofer, Einstein and Banks). The resultant equivalent roughness coefficient formula is provided by Chow (1959) as Equation 6-18:

$$\bar{n} = \frac{\left[\sum_{1}^{N} P_N n_N\right]^{1/2}}{P^{1/2}} = \frac{\left(P_1 n_1^{\;2} + P_2 n_2^{\;2} + \ldots + P_N n_N^{\;2}\right)^{1/2}}{P^{1/2}}$$

where $\bar{n}$ = composite roughness coefficient for cross section
P = total wetted perimeter of cross section (feet)
P_i = wetted perimeter of cross section element i (feet)
n_i = Manning’s roughness coefficient for cross section element i

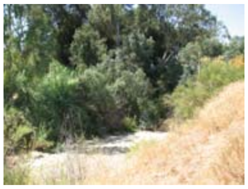
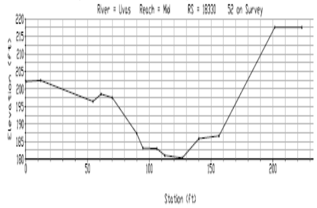
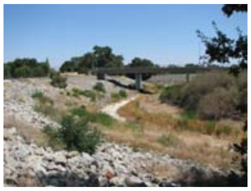
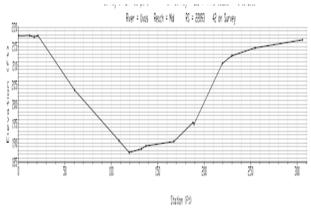
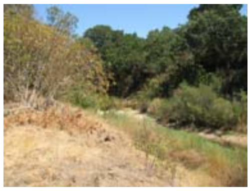
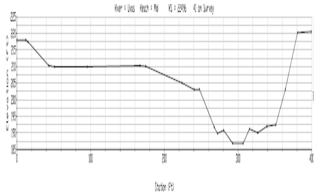
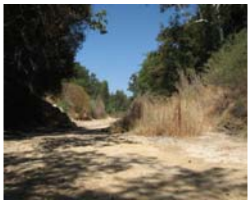
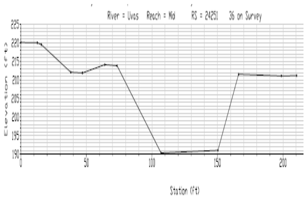
In USACE EM 1110-2-2601 the Colbatch method, which weights roughness based on subdivided cross sectional area is said to be more accurate than an assumption of equal velocity. The resultant equivalent roughness coefficient formula from EM 1110-2-1601 (5-22) is:

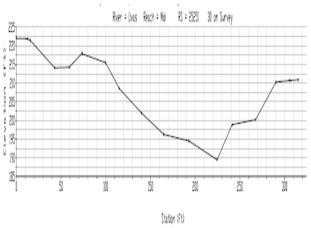
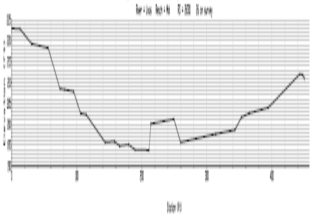
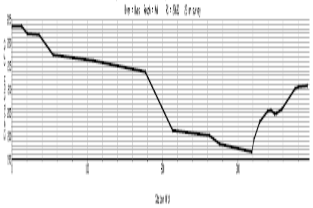
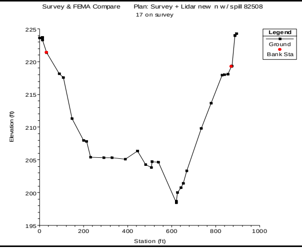
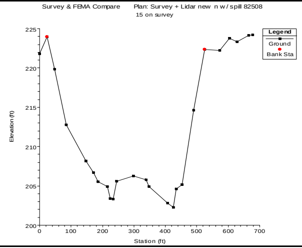
$$\bar{n} = \frac{\left[\sum_{1}^{N} A_N n_N^{\;1.5}\right]^{2/3}}{A^{2/3}} = \frac{\left(A_1 n_1^{\;1.5} + A_2 n_2^{\;1.5} + \ldots + A_N n_N^{\;1.5}\right)^{2/3}}{A^{2/3}}$$

where $\overline{n}$ = composite roughness coefficient for cross section
A = total area of cross section (square feet)
A_i = area of cross section element i (square feet)
n_i = Manning's roughness coefficient for cross section element i

Table 1 presents the selection of channel roughness by reach, from Highway 101 upstream to Santa Teresa Boulevard. Detailed spread sheets are attached for each reach that show the breakdown of roughness elements and composite roughness calculations. Reach descriptions are based on channel stationing that begins at 100+00 at Highway 101. The selected roughness coefficient is generally derived as an average of the roughness estimated using the sum of forces method and the Colbatch method. Using the conveyance method produces unrealistically low composite roughness characteristics in those reaches with heavy vegetation within the channel.

Table 1
Channel Roughness Coefficients Used for Freeboard Evaluation

Station		Photo	Representative Section	Composite Roughness Coefficient (Manning's "n")			
From	To			Conveyance	∑Force	Colbatch	Selected
100+00	214+68			--	--	--	0.06
214+68	220+93			--	--	--	0.045
220+93	229+16			0.016	0.039	0.039	0.039
229+16	248+85			0.033	0.057	0.048	0.053

Station		Photo	Representative Section	Composite Roughness Coefficient (Manning's "n")			
From	To			Conveyance	ΣForce	Colbatch	Selected
251+51	261+70			0.042	0.047	0.046	0.046
261+70	268+53			0.049	0.068	0.068	0.068
268+53	286+09			0.036	0.042	0.040	0.041
286+09	302+54			0.037	0.040	0.041	0.040
302+54	326+05			0.041	0.055	0.055	0.055

Bridge Modeling

In addition to the energy required to overcome channel resistance, structures such as bridges and culverts also cause energy losses, which can result in a raised water surface profile. Methods provided by HEC-RAS for analyzing bridges and culverts under low flow and pressurized conditions are employed in the computations for Uvas Creek. Several methods are available through HEC-RAS to compute energy losses through a bridge. The "energy only" or standard step method handles a bridge section without piers in the same manner as a natural river section, except that the area between the low chord of the bridge (soffit) and the top of road is subtracted from the total cross-sectional area, and the wetted perimeter is increased where water is in contact with the bridge.

Increased frictional resistance due to the added wetted perimeter is included in the energy loss through the structure. This method is appropriate where the base flood elevation does not touch the bridge soffit, which is the case for most bridges within the study reach (Highway 101, Thomas Road, and Santa Teresa Blvd.). When bridge piers are present (e.g. at Thomas Road), in addition to the "energy only" method, conservation of momentum is applied by using a coefficient of drag (1.33 for a semicircular nose and tail), as is Yarnell's method for subcritical "Class A" low flow through the bridge (with a pier coefficient of 0.90 for a semicircular nose and tail). HEC-RAS calculates losses through the bridge using all three methods and applies the answer with the highest calculated upstream energy grade.

Thomas Road/Luchessa Ave. Bridge

For completeness, HEC-RAS's "pressure/weir" feature computes losses through the structure for pressure (orifice) flow, weir flow over the top, or a combination of both. Changes to the water surface profile resulting from the bridge are calculated based on hydraulic formulae that estimate the change in energy and water surface elevation through the bridge. An orifice coefficient of 0.80 is used to represent a typical bridge (orifice in thick wall).

HEC-RAS results indicate that both Highway 101 and Thomas Road (Luchessa Avenue) Bridge function under Class A (subcritical) low flow conditions with the certifiable discharge in Uvas Creek. The lowest part of the bridge superstructures are above the energy grade line at both locations. In both instances, the "energy only" method provides the highest bridge losses. The Miller Avenue culvert dip crossing becomes entirely submerged during moderate storm events. For the proposed certifiable discharge of 18,500 cfs, Miller Avenue acts as an obstruction of the flow area at the bottom of the channel, and is modeled as such.

Transition Losses

An energy loss also takes place just upstream and downstream from each structure as flow contracts at a ratio of 1:1 into a flow constriction and expands at a ratio of 1:4 out of a flow constriction such as bridge abutments. A flow contraction coefficient of 0.1 is used for gradual cross sectional transitions, which characterize the majority of Uvas Creek. Similarly a flow expansion coefficient of 0.3 is used for gradual transitions. (Reference: USACE, Hydrologic Engineering Center) Contraction and expansion coefficients are increased to 0.3 and 0.5 respectively wherever turbulent conditions create the potential for energy loss, such as at a bridge (or culvert), channel bend, pool, or maintenance access ramp.

Boundary Conditions

For subcritical backwater computations, the upstream boundary condition is discharge and the downstream boundary condition is water surface elevation (stage). As directed by the District, Schaaf & Wheeler has increased the flow above the effective 1% (base flood) discharge published in the August 17, 1998 Flood Insurance Study (FIS) for the City of Gilroy to estimate the greatest discharge for which the levee provides sufficient freeboard.

The purpose of certifying a flow greater than the 1% flow is so that if later studies or future changes to the Creek or watershed upstream of the levee result in a higher 1% flow, the levee will not have to be re-analyzed, provided any future base flood discharges are equal to or less than the certified flow. Meetings with FEMA staff prior to project initiation confirmed that a levee may be certified to a flow greater than the published 1% base flood if all levee certification requirements are met for that flow. For the purposes of this analysis, the maximum flow which allows sufficient freeboard is termed the ‘certifiable discharge’.

Downstream of the levee, the channel is undersized to carry the published 1% discharge. Flood waters spill over the left and right channel banks, flowing east or south away from the channel. This is modeled by placing lateral weirs at the channel banks downstream of the levee, allowing the peak flow to decrease in the downstream direction as spills occur. The water surface elevation at Highway 101 was initially set based on the published FIS profile (186 feet NGVD). As flows are increased to determine the maximum certifiable discharge, the downstream starting water surface elevation is also increased. It has been determined, however, that increasing the starting water surface elevation at Highway 101 has no impact on water elevations through the Uvas Levee reach due to the spills that occur between the Levee and Highway 101.

FREEBOARD

Freeboard provides a measure of safety that compensates for the many unknown and difficult-to-quantify parameters that affect the calculation of flood elevations. These factors include uncertainty in rainfall data, soil loss parameters, watershed urbanization, wave action, debris at bridge openings, and general uncertainties in hydrologic and hydraulic procedures. Freeboard is usually expressed in terms of feet above the design base flood elevation. To meet FEMA standards, freeboard is necessary whenever a levee system, including structural floodwalls, is used to provide flood protection.

When mapping flood-prone areas, FEMA only recognizes those levee systems meeting their criteria, which includes a minimum three feet of freeboard whenever the design one-percent water surface elevation is carried above the natural ground elevation. An additional six inches of freeboard (3.5 feet above the water surface) are required at the upstream end of the levee system, tapering to the minimum freeboard of 3.0 feet at the downstream end of the levee. An additional foot of freeboard (4.0 feet above the water surface) must be provided within 100 feet of each side of any structure, such as a bridge or culvert. Within the levee reach, this additional freeboard criterion is applied at the Thomas Road (Luchessa Avenue) Bridge. The Miller Avenue dip crossing is not considered subject to this higher freeboard requirement since there is no break in the Uvas Creek levee at Miller Avenue. Furthermore, during high flows this dip crossing behaves as an obstruction rather than a hydraulic structure. It is noted, however, that for the certifiable discharge, freeboard in excess of 4 feet is provided at, and within 100 feet up and downstream, of the Miller Avenue dip crossing.

Freeboard Evaluation

Attached tables and profiles provide the following information:

1. HEC-RAS hydraulic model output information including main channel invert, water surface elevation, energy grade elevation, average channel velocity and Froude Number.
2. Water surface profile for the certifiable discharge of 18,500 cfs.
3. Required NFIP freeboard elevation.
4. Surveyed levee elevations.
5. Determination of whether the NFIP freeboard criterion is met for a discharge of 18,500 cfs.

Conclusion

The levee along the northern side of Uvas Creek can be certified to meet NFIP freeboard criteria at a flow of 18,500 cfs. Table 2 compares the certifiable discharge to other one-percent discharge estimates of interest. All discharge estimates are at Highway 101 without channel spill.

Table 2
Comparison of One-Percent Discharge Estimates for Uvas Creek

Description of Estimate	One-Percent Discharge (cfs)
Maximum Certifiable Levee Discharge	18,500
SCVWD Design Discharge (2003)	18,300
USACE Discharge Estimate (1972)	17,100
Published Effective Discharge (2009)	14,000

Existing field conditions as of August 2008 have been used as the basis for this conclusion. The District will maintain Uvas Creek in accordance with its adopted stream maintenance plan for vegetation growth and sediment management, and the levees in accordance with its levee operations and maintenance guidelines (all enclosed).

As confirmed by FEMA staff prior to project initiation, because ground on the landward side of the north bank levee slopes away from creek bank, no interior drainage study is required.

SCVWD Levee Recertification
Uvas Creek

Composite Roughness Calculations

Reach 1

Station 326+05 to 302+54 (rep. xsec 312+09)

Channel Element	Elev	b	SS	n	
Upper Left bank			1.5	0.03	
Lower Left bank	212.8		14	0.07	(or 0.08)
Channel 1	205.0	44		0.03	
Channel 2	203.4	30		0.028	
Channel 3	206.0	104		0.07	(or 0.08)
Channel 4	203.5	60		0.07	(or 0.08)
Channel 5	204.0	44		0.03	
Lower Right bank	214.64		5.8	0.03	
Upper Right bank			5.8	0.03	

Total Discharge	**18,500**	cfs
WSEL	**220.1**	feet

Element	n_i	A_i	P_i	R_i	$P_iR_i^{5/3}/n_i$	$P_in_i^2$	$A_in_i^{1.5}$	Q_i	V_i	$V_i^3A_i$
Upper Left bank	0.030	40.19	13.20	3.05	2,814	0.012	0.209	64	1.59	160
Lower Left bank	0.070	1,225.22	109.48	11.19	87,574	0.536	22.691	1,982	1.62	5,187
Channel 1	0.030	665.28	44.00	15.12	135,597	0.040	3.457	3,069	4.61	65,306
Channel 2	0.028	503.10	30.00	16.77	117,720	0.024	2.357	2,664	5.30	74,723
Channel 3	0.070	1,468.48	104.00	14.12	122,554	0.510	27.197	2,774	1.89	9,896
Channel 4	0.070	997.20	60.00	16.62	92,777	0.294	18.468	2,100	2.11	9,310
Channel 5	0.030	709.28	44.00	16.12	150,871	0.040	3.686	3,415	4.81	79,140
Lower Right bank	0.030	666.49	62.62	10.64	107,493	0.056	3.463	2,433	3.65	32,416
Upper Right bank	0.030	87.09	32.25	2.70	5,629	0.029	0.453	127	1.46	273
		6,275.24	499.55	12.56	817,401	1.511	81.528	18,500		276,139

Average Velocity	2.95	fps
Composite n (Conveyance)	0.041	
Composite n (Force)	0.055	
Composite n (Colbatch)	0.055	
α	1.72	

n used for freeboard eval.	0.055

LOB	0.025
ROB	0.030

SCVWD Levee Recertification
Uvas Creek
Composite Roughness Calculations

Reach 2
Station 302+54 to 286+09 (rep. xsec 296+94)

Channel Element	Elev	b	SS	n
Lower Left bank	218.17		12	0.04
Channel 1	205.3	270		0.04
Channel 2	202.5	113		0.05
Channel 3	198.5	20		0.028
Lower Right bank	206		10	0.04
Upper Right bank			12	0.03

Total Discharge	**18,500**	cfs
WSEL	**219.6**	feet

Element	n_i	A_i	P_i	R_i	$P_iR_i^{5/3}/n_i$	$P_in_i^2$	$A_in_i^{1.5}$	Q_i	V_i	$V_i^3A_i$
Lower Left bank	0.040	1,217.76	154.98	7.86	120,328	0.248	9.742	1,575	1.29	2,635
Channel 1	0.040	3,866.40	270.00	14.32	570,001	0.432	30.931	7,461	1.93	27,785
Channel 2	0.050	1,934.56	113.00	17.12	257,009	0.283	21.629	3,364	1.74	10,174
Channel 3	0.028	422.40	20.00	21.12	115,264	0.016	1.979	1,509	3.57	19,250
Lower Right bank	0.040	1,302.75	75.37	17.28	217,718	0.121	10.422	2,850	2.19	13,638
Upper Right bank	0.030	1,113.03	164.01	6.79	132,988	0.148	5.783	1,741	1.56	4,258
		9,856.90	797.36	12.36	1,413,308	1.246	80.487	18,500		77,741

Average Velocity	1.88	fps
Composite n (Conveyance)	0.037	
Composite n (Force)	0.040	
Composite n (Colbatch)	0.041	
α	1.19	

n used for freeboard eval.	0.040

LOB	0.025
ROB	0.030

SCVWD Levee Recertification
Uvas Creek
Composite Roughness Calculations

Reach 3
Station 286+09 to 268+53 (rep. xsec 276+30)

Channel Element	Elev	b	SS	n
Lower Left bank	215.74		3	0.045
Channel 1	197.0	37.93		0.028
Lower Right bank	210.16		6	0.045

Total Discharge	**18,500**	cfs
WSEL	**219.0**	feet

Element	n_i	A_i	P_i	R_i	$P_iR_i^{5/3}/n_i$	$P_in_i^2$	$A_in_i^{1.5}$	Q_i	V_i	$V_i^3A_i$
Lower Left bank	0.045	710.06	59.26	11.98	82,622	0.120	6.778	3,167	4.46	62,974
Channel 1	0.028	834.46	37.93	22.00	233,989	0.030	3.910	8,968	10.75	1,035,689
Lower Right bank	0.045	1,217.56	80.05	15.21	166,100	0.162	11.623	6,366	5.23	174,011
		2,762.08	177.24	15.58	482,711	0.312	22.311	18,500		1,272,673

Average Velocity	6.70	fps
Composite n (Conveyance)	0.036	
Composite n (Force)	0.042	
Composite n (Colbatch)	0.040	
α	1.53	

n used for freeboard eval.	0.041

LOB	0.035
ROB	0.030

SCVWD Levee Recertification
Uvas Creek
Composite Roughness Calculations

Reach 4
Station 268+53 to 261+70 (rep. xsec 265+01)

Channel Element	Elev	b	SS	n
Left bank	207.87		3	0.035
Left Channel	195.13	68		0.028
Island	200.7	48.5		0.1
Right Channel	192.0	83.5		0.08
Right bank	198.8		7.5	0.03

Total Discharge	**18,500**	cfs
WSEL	**218.8**	feet

Element	n_i	A_i	P_i	R_i	$P_iR_i^{5/3}/n_i$	$P_in_i^2$	$A_in_i^{1.5}$	Q_i	V_i	$V_i^3A_i$
Left bank	0.035	660.44	40.29	16.39	121,771	0.049	4.325	1,645	2.49	10,196
Left Channel	0.028	1,608.20	68.00	23.65	473,227	0.053	7.535	6,391	3.97	100,928
Island	0.100	2,236.13	83.50	26.78	200,157	0.835	70.713	2,703	1.21	3,950
Right Channel	0.080	2,236.13	83.50	26.78	250,196	0.534	50.598	3,379	1.51	7,715
Right bank	0.030	1,198.37	51.75	23.16	324,514	0.047	6.227	4,383	3.66	58,614
		7,939.27	327.04	24.28	1,369,865	1.519	139.397	18,500		181,403

Average Velocity	2.33	fps
Composite n (Conveyance)	0.049	
Composite n (Force)	0.068	
Composite n (Colbatch)	0.068	
α	1.81	

n used for freeboard eval.	0.068

LOB	0.050
ROB	0.035

SCVWD Levee Recertification
Uvas Creek
Composite Roughness Calculations

Reach 5
Station 261+70 to 251+51 (rep. xsec 252+51)

Channel Element	Elev	b	SS	n
Left bank 1	217.87		4	0.05
Left bank 2	208.0		4	0.05
Left bank 3	196.3		16	0.045
Channel	192.0	31.51		0.045
Right bank 3	198.8		2	0.045
Right bank 2	200.2		20	0.045
Right bank 1	210.07		4	0.045

Total Discharge	**18,500**	cfs
WSEL	**218.2**	feet

Element	n_i	A_i	P_i	R_i	$P_iR_i^{5/3}/n_i$	$P_in_i^2$	$A_in_i^{1.5}$	Q_i	V_i	$V_i^3A_i$
Left bank 1	0.050	208.30	40.82	5.10	12,348	0.102	2.329	299	1.44	617
Left bank 2	0.050	753.36	48.32	15.59	94,030	0.121	8.423	2,278	3.02	20,836
Left bank 3	0.045	1,635.74	68.13	24.01	302,511	0.138	15.615	7,330	4.48	147,169
Channel	0.045	824.93	31.51	26.18	161,629	0.064	7.875	3,916	4.75	88,255
Right bank 3	0.045	311.36	15.29	20.36	51,585	0.031	2.972	1,250	4.01	20,141
Right bank 2	0.045	507.55	27.23	18.64	79,283	0.055	4.845	1,921	3.78	27,517
Right bank 1	0.045	515.02	40.70	12.66	62,153	0.082	4.916	1,506	2.92	12,876
		4,756.25	272.01	17.49	763,539	0.593	46.975	18,500		317,411

Average Velocity	3.89	fps
Composite n (Conveyance)	0.042	
Composite n (Force)	0.047	
Composite n (Colbatch)	0.046	
α	1.13	

n used for freeboard eval.	0.046

LOB	0.050
ROB	0.050

SCVWD Levee Recertification
Uvas Creek
Composite Roughness Calculations

Reach 6
Station 251+51 to 248+85 (rep. xsec 249+86)

Channel Element	Elev	b	SS	n
Lower Left bank	217.8		2	0.08
Channel 1	191.2	14.35		0.025
Channel 2	192.4	15.72		0.08
Channel 3	190.2	14.11		0.025
Lower Right bank	200.97		1.5	0.055
Upper Right bank	201.97		1.5	0.055

Total Discharge	**18,500**	cfs
WSEL	**217.8**	feet

Element	n_i	A_i	P_i	R_i	$P_iR_i^{5/3}/n_i$	$P_in_i^2$	$A_in_i^{1.5}$	Q_i	V_i	$V_i^3A_i$
Lower Left bank	0.080	706.50	59.43	11.89	45,997	0.380	15.986	2,047	2.90	17,186
Channel 1	0.025	381.42	14.35	26.58	135,885	0.009	1.508	6,047	15.85	1,520,184
Channel 2	0.080	400.07	15.72	25.45	43,269	0.101	9.053	1,926	4.81	44,611
Channel 3	0.025	389.58	14.11	27.61	142,352	0.009	1.540	6,335	16.26	1,675,350
Lower Right bank	0.055	359.04	19.42	18.49	45,651	0.059	4.631	2,032	5.66	65,049
Upper Right bank	0.055	24.51	1.80	13.60	2,539	0.005	0.316	113	4.61	2,400
		2,261.13	124.83	18.11	415,692	0.563	33.034	18,500		3,324,781

Average Velocity	8.18	fps
Composite n (Conveyance)	0.038	
Composite n (Force)	0.067	
Composite n (Colbatch)	0.060	
α	2.68	

n used for freeboard eval.	0.063

LOB	0.050
ROB	0.050

SCVWD Levee Recertification
Uvas Creek
Composite Roughness Calculations

Reach 7
Station 248+85 to 229+16 (rep xsec 242+51)

Channel Element	Elev	b	SS	n
Left bank	214.0		1.5	0.065
Channel	190.7	43.42		0.032
Right bank	211.17		0.77	0.075

Total Discharge	**18,500**	cfs
WSEL	**215.2**	feet

Element	n_i	A_i	P_i	R_i	$P_iR_i^{5/3}/n_i$	$P_in_i^2$	$A_in_i^{1.5}$	Q_i	V_i	$V_i^3A_i$
Left bank 4	0.065	449.18	42.08	10.68	33,503	0.178	7.444	1,898	4.22	33,874
Channel	0.032	1,063.79	43.42	24.50	280,425	0.044	6.089	15,884	14.93	3,541,391
Right bank 4	0.075	224.97	25.89	8.69	12,679	0.146	4.621	718	3.19	7,320
		1,737.94	111.38	15.60	326,608	0.368	18.154	18,500		3,582,585

Average Velocity	10.64	fps
Composite n (Conveyance)	0.033	
Composite n (Force)	0.057	
Composite n (Colbatch)	0.048	
α	1.71	

n used for freeboard eval.	0.053

LOB	0.050
ROB	0.050

SCVWD Levee Recertification
Uvas Creek
Composite Roughness Calculations

Reach 8
Station 229+16 to 220+93 (rep xsec 224+96)

Channel Element	Elev	b	SS	n
Upper Left bank			4	0.035
Left shelf	209.9	131.59		0.035
Lower Left bank	189.8		5	0.035
Channel	188.0	79.64		0.04
Right bank			1	0.05

Total Discharge	**18,500**	cfs
WSEL	**212.3**	feet

Element	n_i	A_i	P_i	R_i	$P_iR_i^{5/3}/n_i$	$P_in_i^2$	$A_in_i^{1.5}$	Q_i	V_i	$V_i^3A_i$
Upper Left bank	0.035	11.52	9.90	1.16	364	0.012	0.075	5	0.42	1
Left shelf	0.035	315.82	131.59	2.40	16,175	0.161	2.068			
Lower Left bank	0.035	1,252.35	9.28	134.95	941,390	0.011	8.200			
Channel	0.040	1,937.64	79.64	24.33	406,732	0.127	15.501	5,415	2.79	42,297
Right bank	0.050	295.97	34.41	8.60	24,851	0.086	3.309	331	1.12	413
		3,813.30	264.81	14.40	1,389,512	0.398	29.154	5,751		42,711

Average Velocity	4.85	fps
Composite n (Conveyance)	0.016	
Composite n (Force)	0.039	
Composite n (Colbatch)	0.039	
α	0.10	

n used for freeboard eval.	0.039

LOB	0.035
ROB	0.035

SCVWD Levee Recertification
Uvas Creek
Composite Roughness Calculations

Reach 9
Station 220+93 to 214+68 (rep. xsec 220+93)

Rocks throughout
n = 0.045

LOB	0.035
ROB	0.035

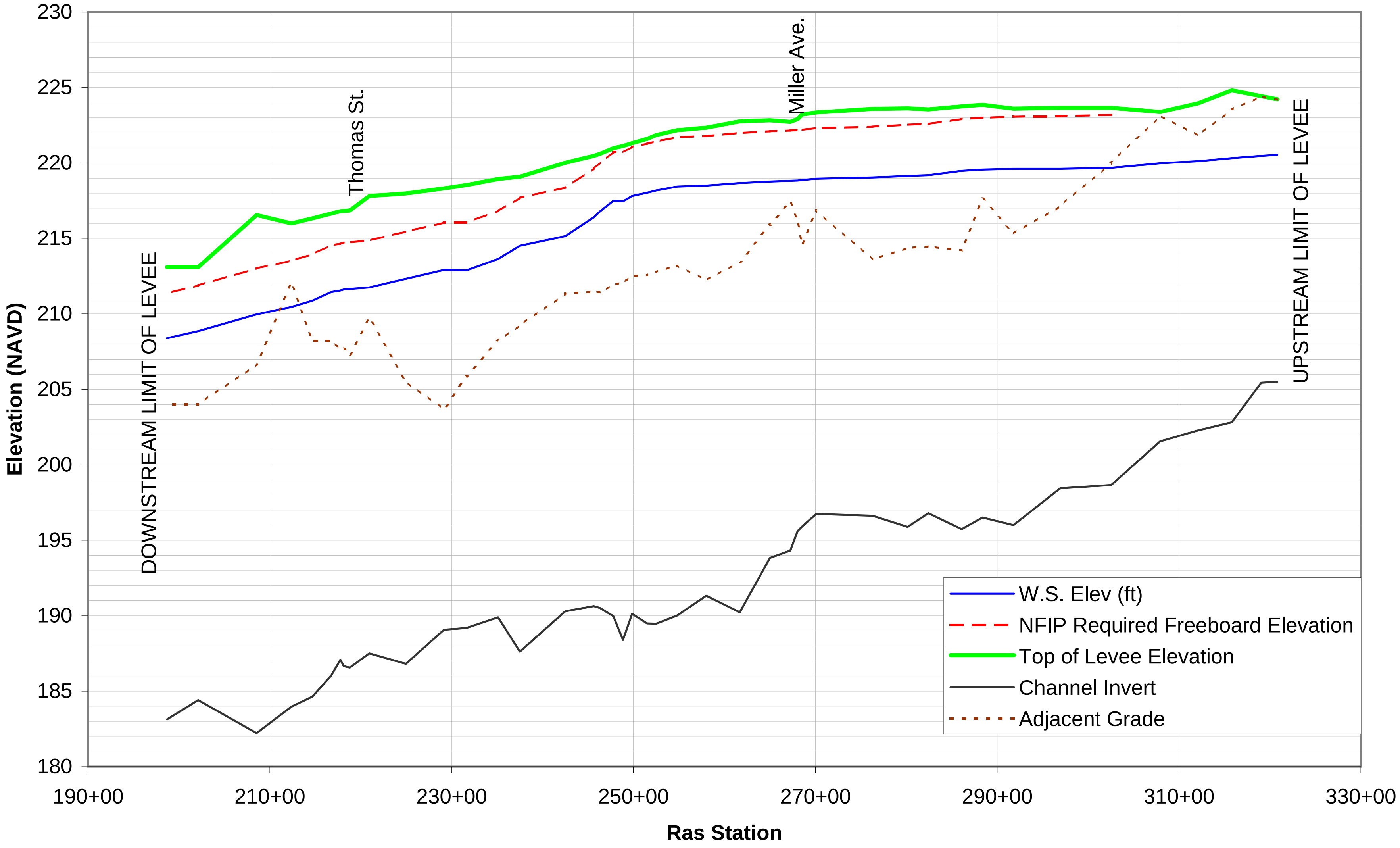
SCVWD Levee Recertification
Uvas Creek
Composite Roughness Calculations

Reach 10
Station 214+68 to 100+00

Consistent 0.06 in channel

LOB	0.035
ROB	0.035

Uvas Creek North Levee Freeboard Evaluation
Q = 18,500 cfs



Summary of Freeboard Evaluation for Uvas Creek Levee on Northern Bank in Gilroy

River Station	Q Total (cfs)	Channel Invert (ft NAVD)	W.S. Elev (ft NAVD)	EGL (ft NAVD)	Avg. Channel Velocity (ft/sec)	Froude No.	Top of Levee (ft NAVD)	Natural Ground Elev. (ft NAVD)	Levee Condition?	Freeboard Reqd. for Certification (feet)	Reqd. Freeboard Elevation (ft NAVD)	Freeboard Provided (feet)	Certifiable?
326+05	18,500	204.1	221.43	221.55	2.71	0.15							
323+36	18,500	204.6	221.04	221.32	4.26	0.22							
323+09	Santa Teresa Bridge												
322+82	18,500	205.6	220.81	221.12	4.40	0.23							
322+16	18,500	205.6	220.75	221.04	4.27	0.22							
UPSTREAM LIMIT OF LEVEE													
320+80	18,500	205.5	220.55	220.88	4.55	0.25	224.2	224.2	**Non-Regulatory Levee**	---		3.7	
319+04	18,500	205.4	220.48	220.65	3.33	0.17	224.4	224.4	**Non-Regulatory Levee**	---		4.0	
315+82	18,500	202.8	220.32	220.47	3.12	0.16	224.8	223.6	**Non-Regulatory Levee**	---		4.5	
312+09	18,500	202.3	220.12	220.28	3.20	0.16	224.0	221.8	**Non-Regulatory Levee**	---		3.8	
307+93	18,500	201.6	219.98	220.10	2.74	0.13	223.4	223.1	**Non-Regulatory Levee**	---		3.4	
302+54	18,500	198.7	219.68	219.79	2.61	0.13	223.7	220.0	**Non-Regulatory Levee**	3.5	223.2	4.0	YES
296+94	18,500	198.4	219.62	219.68	1.96	0.10	223.7	217.1	Regulatory Levee	3.5	223.1	4.0	YES
291+79	18,500	196.0	219.61	219.64	1.26	0.06	223.6	215.4	Regulatory Levee	3.4	223.1	4.0	YES
288+38	18,500	196.5	219.57	219.62	1.85	0.08	223.9	217.6	Regulatory Levee	3.4	223.0	4.3	YES
286+09	18,500	195.7	219.49	219.60	2.71	0.12	223.8	214.2	Regulatory Levee	3.4	222.9	4.3	YES
282+45	18,500	196.8	219.20	219.49	4.55	0.23	223.6	214.5	Regulatory Levee	3.4	222.6	4.4	YES
280+15	18,500	195.9	219.15	219.35	3.93	0.19	223.6	214.4	Regulatory Levee	3.4	222.5	4.5	YES
276+30	18,500	196.6	219.04	219.20	3.49	0.18	223.6	213.6	Regulatory Levee	3.4	222.4	4.6	YES
270+09	18,500	196.8	218.96	219.06	2.63	0.11	223.4	216.9	Regulatory Levee	3.3	222.3	4.4	YES
268+53	18,500	195.9	218.88	219.03	3.91	0.15	223.2	214.6	Regulatory Levee	3.3	222.2	4.3	YES
268+05	18,500	195.6	218.84	218.97	3.28	0.12	222.9	216.2	Regulatory Levee	3.3	222.2	4.1	YES
267+25	18,500	194.3	218.83	218.92	2.49	0.11	222.7	217.5	Regulatory Levee	3.3	222.2	3.9	YES
265+01	18,500	193.8	218.78	218.85	2.28	0.09	222.8	215.9	Regulatory Levee	3.3	222.1	4.1	YES
261+70	18,500	190.2	218.68	218.77	2.65	0.11	222.8	213.4	Regulatory Levee	3.3	222.0	4.1	YES
258+01	18,500	191.3	218.51	218.65	3.51	0.15	222.4	212.2	Regulatory Levee	3.3	221.8	3.8	YES
254+79	18,500	190.0	218.43	218.57	3.36	0.14	222.2	213.2	Regulatory Levee	3.3	221.7	3.7	YES
252+51	18,500	189.5	218.18	218.47	4.54	0.20	221.9	212.8	Regulatory Levee	3.3	221.4	3.7	YES
251+51	18,500	189.5	218.03	218.41	5.23	0.22	221.6	212.6	Regulatory Levee	3.2	221.3	3.6	YES
249+86	18,500	190.1	217.81	218.26	5.69	0.23	221.3	212.5	Regulatory Levee	3.2	221.0	3.5	YES
248+85	18,500	188.4	217.47	218.09	6.61	0.26	221.1	212.1	Regulatory Levee	3.2	220.7	3.7	YES
247+79	18,500	190.0	217.49	217.90	5.39	0.22	221.0	211.9	Regulatory Levee	3.2	220.7	3.5	YES
246+31	18,500	190.5	216.79	217.62	7.52	0.30	220.6	211.4	Regulatory Levee	3.2	220.0	3.8	YES
245+63	18,500	190.6	216.41	217.47	8.47	0.34	220.5	211.5	Regulatory Levee	3.2	219.6	4.1	YES
242+51	18,500	190.3	215.16	216.60	9.97	0.41	220.0	211.3	Regulatory Levee	3.2	218.4	4.9	YES
237+51	18,500	187.6	214.51	215.28	7.05	0.30	219.1	209.3	Regulatory Levee	3.2	217.7	4.6	YES
235+11	18,500	189.9	213.64	214.76	8.52	0.38	219.0	208.2	Regulatory Levee	3.2	216.8	5.3	YES
231+62	18,500	189.2	212.89	213.89	8.14	0.36	218.5	205.9	Regulatory Levee	3.1	216.0	5.7	YES
229+16	18,500	189.1	212.91	213.36	5.47	0.25	218.3	203.7	Regulatory Levee	3.1	216.0	5.4	YES
224+96	18,500	186.8	212.33	212.86	5.86	0.34	218.0	205.5	Regulatory Levee	3.1	215.4	5.6	YES
220+93	18,500	187.5	211.76	212.43	6.57	0.30	217.8	209.7	Regulatory Levee	3.1	214.9	6.1	YES
218+78	18,500	186.6	211.66	212.21	5.94	0.27	216.9	207.3	Regulatory Levee	4.0	215.7	5.2	YES
218+11	18,500	186.7	211.62	212.00	4.96	0.22	216.8	207.7	Regulatory Levee	4.0	215.6	5.2	YES
217+93	Thomas Street Bridge (Luchessa Avenue)												
217+75	18,500	187.1	211.56	211.95	5.02	0.23	216.8	207.7	Regulatory Levee	4.0	215.6	5.2	YES
216+75	18,500	186.0	211.46	211.88	5.22	0.23	216.7	208.2	Regulatory Levee	4.0	215.5	5.2	YES
214+68	18,500	184.6	210.89	211.60	6.77	0.33	216.3	208.2	Regulatory Levee	3.1	214.0	5.5	YES
212+37	18,500	184.0	210.46	211.20	7.38	0.30	216.0	212.1	Non-Regulatory Levee	3.1	213.5	5.5	YES
208+53	18,500	182.2	209.98	210.44	6.19	0.25	216.6	206.7	Regulatory Levee	3.0	213.0	6.6	YES
202+13	18,500	184.4	208.87	209.42	6.74	0.28	213.1	204.0	Regulatory Levee	3.0	211.9	4.2	YES
198+68	18,500	183.1	208.39	208.83	6.04	0.25	213.1	204.0	Regulatory Levee	3.0	211.4	4.7	YES
DOWNSTREAM LIMIT OF LEVEE													
196+97	18,500	180.9	208.06	208.55	6.20	0.28							
191+80	16,219	182.0	206.09	207.14	8.25	0.41							
186+42	12,866	180.4	204.00	204.56	6.01	0.28							
183+30	12,138	180.4	203.31	203.88	6.10	0.31							
177+74	11,265	179.7	201.86	202.39	5.83	0.33							
171+52	11,183	176.1	201.02	201.30	4.23	0.21							
167+05	11,090	177.8	200.37	200.72	4.76	0.25							
159+59	11,071	177.4	198.89	199.44	5.94	0.28							
156+69	10,967	176.5	198.15	198.79	6.40	0.33							
153+10	10,717	175.5	197.68	198.02	4.68	0.24							
149+15	9,992	176.4	197.14	197.50	4.78	0.23							
143+92	9,400	174.4	196.40	196.81	5.10	0.24							
139+72	9,400	173.5	195.66	196.13	5.51	0.27							
134+52	9,400	171.3	194.84	195.28	5.33	0.24							
130+42	9,400	169.7	194.08	194.61	5.88	0.26							
127+77	9,353	169.2	193.45	194.08	6.38	0.29							
121+67	8,694	169.5	191.93	192.62	6.66	0.32							
114+68	8,578	170.1	190.80	191.19	5.00	0.24							
107+20	8,502	167.2	189.23	189.75	5.79	0.32							
101+80	8,485	166.8	188.92	189.12	3.62	0.15							
101+11	8,485	Highway 101											
100+41	8,485	167.2	188.76	188.93	3.27	0.13							
100+00	8,485	164.4	188.75	188.91	3.16	0.13							

TAB 7

Schaaf & Wheeler
CONSULTING CIVIL ENGINEERS

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FAX (408) 246-5624
canderson@swsv.com

TECHNICAL MEMORANDUM

PROJECT: Recertification of Provisionally Accredited Levee P0 in Gilroy, California
DATE: May 22, 2009

PREPARED: Charles D. Anderson, P.E.
JOB #: SCVW.18.08-001A6

SUBJECT: Sediment Transport Considerations for Uvas Creek

Based on record surveys and experience with past flood events, the bed and banks of Uvass Creek appear to be relatively stable with only minor local scour, low flow channel migration and sediment deposition. A July 30, 2007 levee and creek inspection by the U.S. Army Corps of Engineers[1] revealed the following with respect to sediment transport in the leveed reach of Uvas Creek:

“No erosion or bank caving is observed on the landward or riverward sides of the levee that might endanger its stability.”

“Obstructions, vegetation, debris, or sediment are minor and have not impaired channel flow capacity or blocked more than ten percent of any culvert openings, but should be removed.” (It is noted that such removal is part of the District’s Stream Maintenance Program described in Tab 8.)

“No obstructions, vegetation, debris, or sediment accumulation [are observed] within the channel.”

“Minor [sediment deposition] occurs beneath Highway 101 bridge.”

“No head cutting or horizontal deviation observed.”

A comparison of several creek cross sections from the 1989 flood insurance study model against the same sections field surveyed in 2008 reveals relative stream bed stability over 20 years, which includes the flood of record in 1998.

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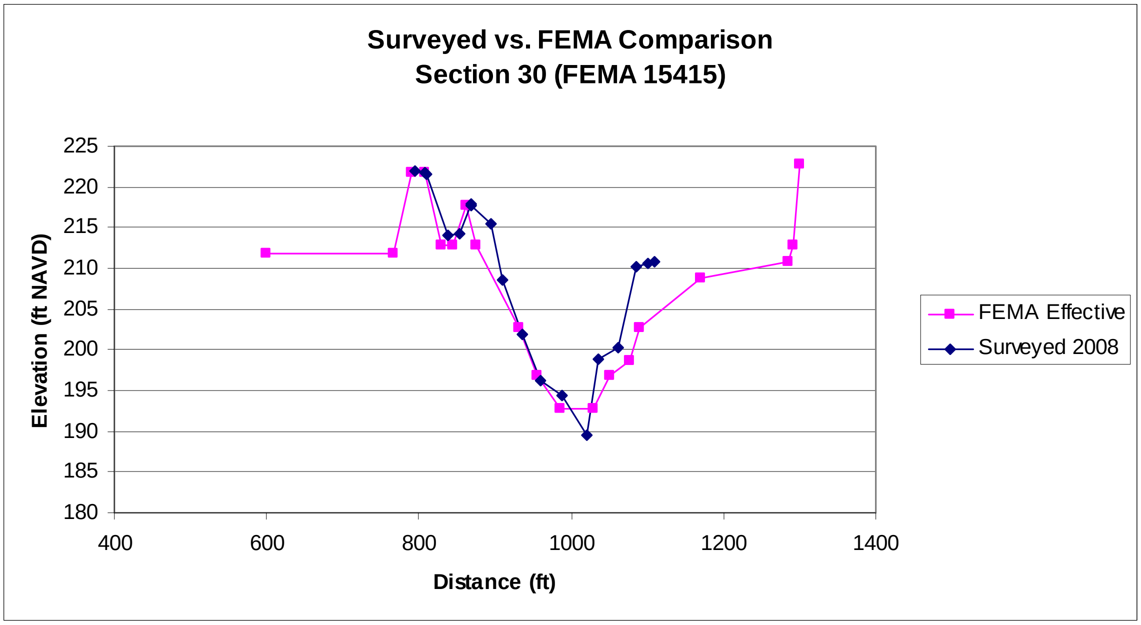
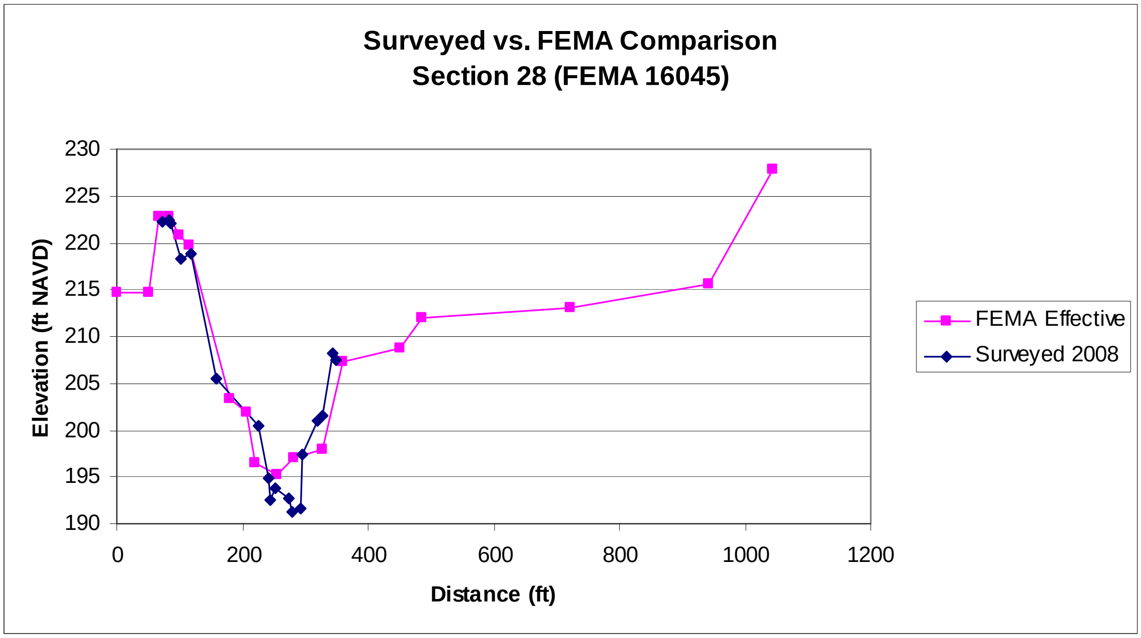
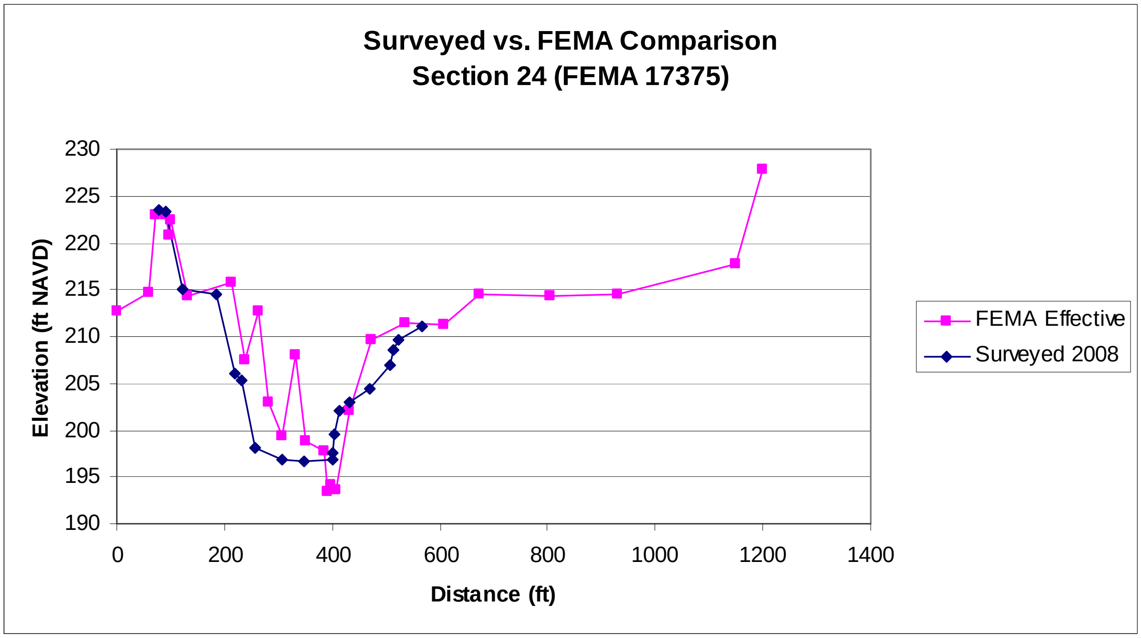
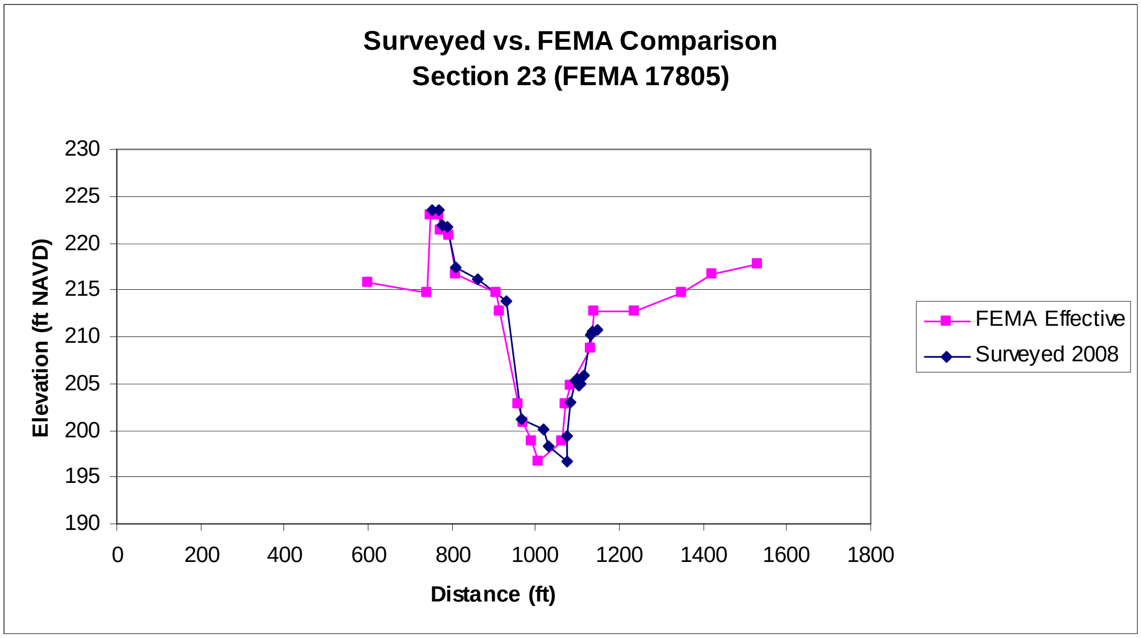
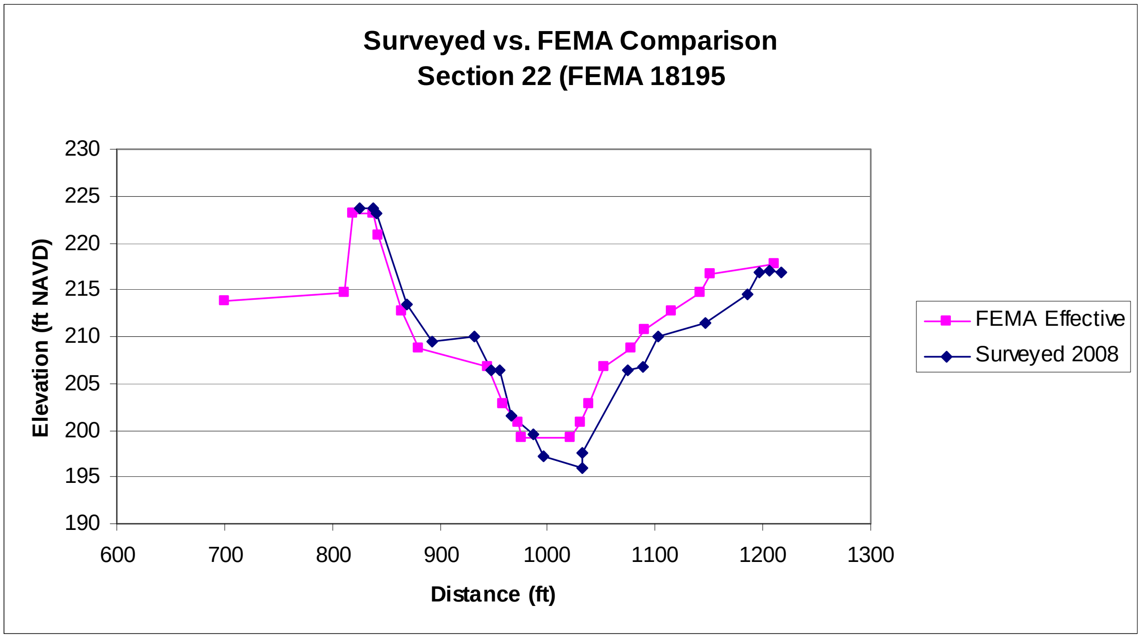
[1] USACE, “Flood Damage Reduction System Inspection Report for Uvas Creek,” October 2, 2007.

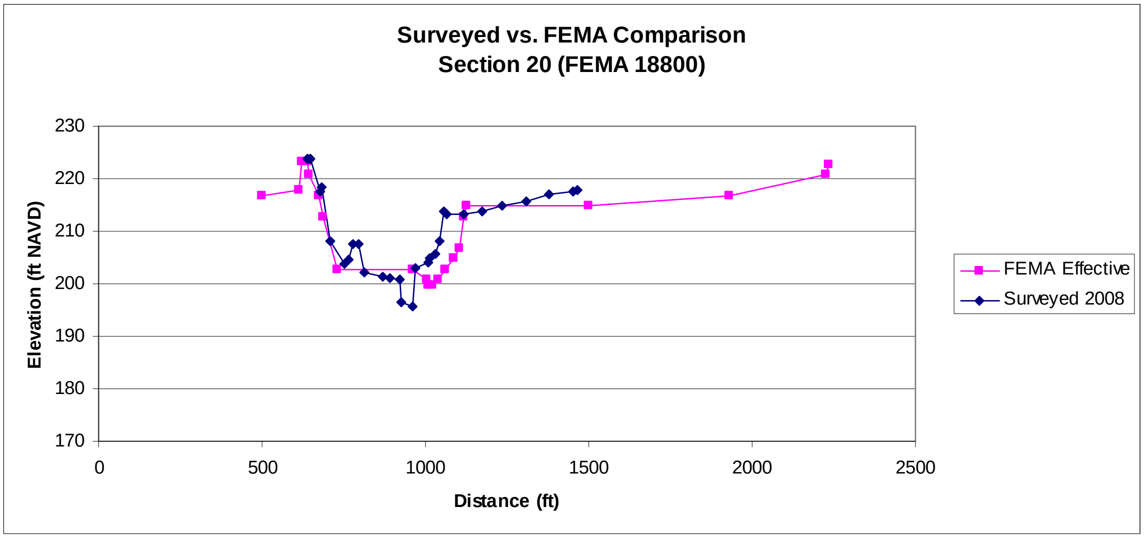

Surveyed vs. FEMA Comparison
Section 30 (FEMA 15415)
Elevation (ft NAVD)
225
220
215
210
205
200
195
190
185
180
400
600
800
1000
1200
1400
Distance (ft)
FEMA Effective
Surveyed 2008

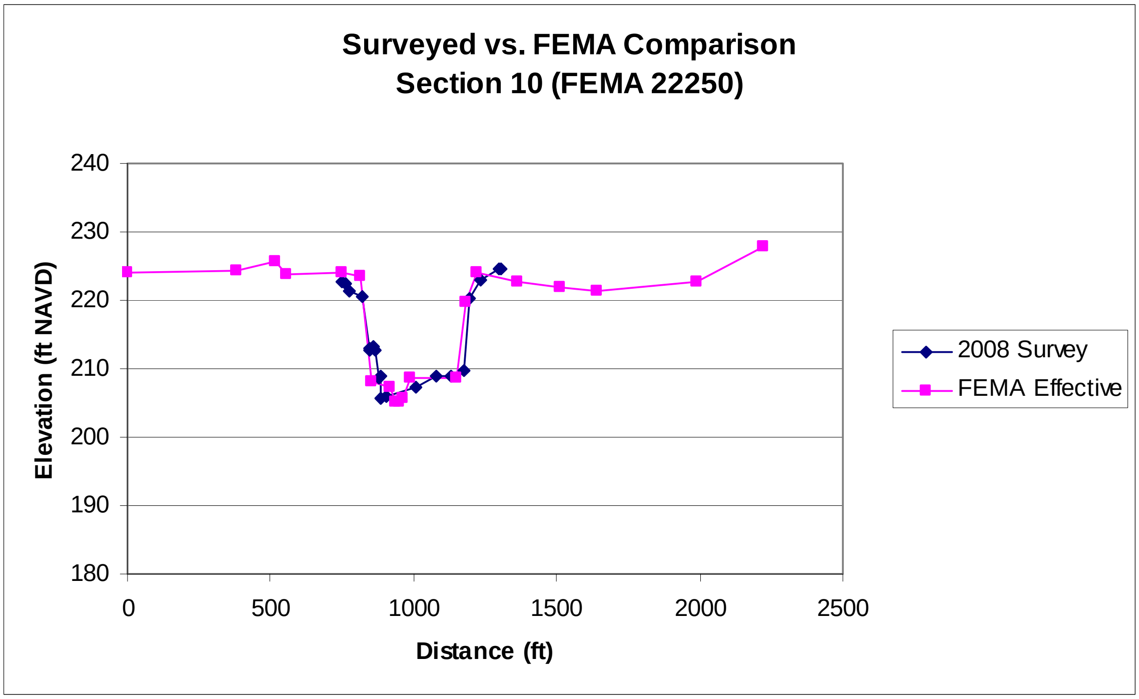

Surveyed vs. FEMA Comparison
Section 28 (FEMA 16045)
Elevation (ft NAVD)
230
225
220
215
210
205
200
195
190
0
200
400
600
800
1000
1200
Distance (ft)
FEMA Effective
Surveyed 2008


Surveyed vs. FEMA Comparison
Section 24 (FEMA 17375)
Elevation (ft NAVD)
230
225
220
215
210
205
200
195
190
0
200
400
600
800
1000
1200
1400
Distance (ft)
FEMA Effective
Surveyed 2008


Surveyed vs. FEMA Comparison
Section 23 (FEMA 17805)
Elevation (ft NAVD)
230
225
220
215
210
205
200
195
190
0
200
400
600
800
1000
1200
1400
1600
1800
Distance (ft)
FEMA Effective
Surveyed 2008


Surveyed vs. FEMA Comparison
Section 22 (FEMA 18195
Elevation (ft NAVD)
230
225
220
215
210
205
200
195
190
600
700
800
900
1000
1100
1200
1300
Distance (ft)
FEMA Effective
Surveyed 2008


Surveyed vs. FEMA Comparison
Section 20 (FEMA 18800)
Elevation (ft NAVD)
230
220
210
200
190
180
170
0
500
1000
1500
2000
2500
Distance (ft)
FEMA Effective
Surveyed 2008


Surveyed vs. FEMA Comparison
Section 10 (FEMA 22250)
Elevation (ft NAVD)
240
230
220
210
200
190
180
0
500
1000
1500
2000
2500
Distance (ft)
2008 Survey
FEMA Effective

Uvas Creek Velocities at Toe of Levee

Station	Levee Velocity (ft/s)
32080	4.57
31904	0
31582	1.87
31209	2.27
30793	2.05
30254	1.63
29694	1.39
29179	1.16
28838	1.26
28609	1.6
28245	2.78
28015	3.14
27630	1.56
27009	1.11
26853	2.6
26805	2.44
26725	1.45
26501	1.47
26170	1.97
25801	2.35
25479	2.96
25251	4.97
25151	3.95
24986	4.92
24885	5.08
24779	4.75
24631	6.32
24563	6.96
24251	10.54
23751	7.59
23511	8.21
23162	6.65
22916	3.87
22496	5.06
22093	2.8
21878	2.69
21811	3.17
21793	3.81
21793	3.7
21775	3.08
21675	1.33
21468	1.07
21237	1.56
20853	3.11
20213	4.65
19868	3.81

TAB 8

EXCERPTS FROM

SANTA CLARA VALLEY WATER DISTRICT

STREAM MAINTENANCE PROGRAM

Chapter 1
INTRODUCTION

This chapter describes the objectives and applicability of the Santa Clara Valley Water District's (District) Stream Maintenance Program (Program). As a foundation for understanding the resource protection and maintenance issues discussed in this report, this chapter also defines routine stream maintenance and briefly describes the District's facilities where stream maintenance is required. In conclusion, this chapter provides a summary of related programmatic documentation that is required for implementation of the Stream Maintenance Program and the organization of subsequent chapters.

A. PROGRAM PURPOSE AND OBJECTIVES

The Stream Maintenance Program is designed to provide long-term guidance to the District to implement routine stream and canal maintenance projects in order to meet the District's flood protection and water supply mandates in a feasible, cost-effective, and environmentally-sensitive manner. This authority is provided by the District Act, as amended. The main goals of preparing the Stream Maintenance Program are to maintain streams and canals to meet their original design to provide flood protection and water supply, coordinate the various aspects of routine stream maintenance to better achieve this goal, and assist in obtaining multiyear permits. The Stream Maintenance Program only applies to District facilities.

The objectives of the Stream Maintenance Program are as follows:

1. Standardize practices and protocols for routine sediment removal, vegetation management, and bank protection in and around the streams and related facilities within the District's jurisdiction.

2. Identify cost-effective routine stream maintenance practices and protocols.

3. Ensure routine stream maintenance activities reflect the District's policies of environmental protection and stewardship.

4. To the extent practical, avoid or minimize adverse environmental effects and encourage preservation and restoration.

5. Establish effective and economically-practical compensatory mitigation for environmental impacts from routine stream maintenance activities.

6. Establish practices and protocols that optimize operational flexibility and allow the integration of lessons learned and improvements in Best Management Practices.

The Stream Maintenance Program will be used by District staff to ensure that routine stream maintenance practices are conducted in an efficient, consistent, and environmentally-sensitive manner.

B. APPLICABILITY AND USE OF THE STREAM MAINTENANCE PROGRAM

The Stream Maintenance Program applies to all of the District's routine stream maintenance activities, including three major types of activities: sediment removal, vegetation management, and bank protection. Many of these activities are undertaken to ensure flood conveyance capacity is maintained in existing streams. In addition, routine maintenance includes vegetation removal in and around the streams and canals within the District's jurisdiction to ensure appropriate access and fire control. More minor maintenance activities are also included in the definition of routine stream maintenance.

The stream maintenance work area addressed by this Stream Maintenance Program includes the streams, canals, and any adjacent property that the District owns or holds an easement for access and maintenance. The District does not provide maintenance on private property when no easement exists. The maintenance work area is the stream channel or canal itself, typically extending to 20 feet past the top of bank when access is provided, and less when access is not provided. Creeks with constructed levees may require a wider maintenance easement. The maintenance work area is typically less than the District's permitting jurisdiction, which is within 50 feet of the top of bank of the streams.

The Stream Maintenance Program is designed to be a process and policy document that can be adopted by the District. Once adopted, the Stream Maintenance Program will be used by the District to guide the implementation of routine stream maintenance activities and projects. The Stream Maintenance Program outlines specific measures, protocols, policies, and reporting requirements to ensure that routine stream maintenance projects are implemented in an efficient and environmentally-sensitive manner. This Stream Maintenance Program is subject to future revisions as improvements and modifications are made to reflect the best available knowledge, technology, and practices.

The Stream Maintenance Program is intended to establish an ongoing District program of indefinite length. The Stream Maintenance Program uses a 20-year planning time frame to project the level of future work, and this same time frame is used by the Environmental Impact Report (EIR) to evaluate cumulative impact. Permits for stream maintenance from regulatory agencies are expected to last for a period of 10 years, after which the District would apply for a renewal. The Stream Maintenance Program will be reviewed annually as described in Chapter 3 to determine if adjustments to the BMPs need to be made. The overall program will be reviewed in 10 years as part of the permit renewal process.

The 20-year time frame was used because this is the period of time over which future work areas and impacts can be reliably projected. Projections for future work under the Stream Maintenance Program are based on an analysis of historical data going back to 1977. All forms of maintenance show a consistent pattern; however, projections of future stream maintenance activities for the Stream Maintenance Program cannot represent the exact extent of work that will occur. Actual stream maintenance activities vary from year to year. There may be some future routine maintenance activities that are within the District's jurisdiction and are consistent with the descriptions of work and impacts evaluated for the program overall but which were not specifically included in the District's projection of work areas. Maintenance at such sites is still included in the program as long as it does not result in significant environmental effects substantially different than those evaluated for the program as a whole.

If routine stream maintenance practices are substantially changed at any time, the program will be updated. If these changes would result in significant impacts not evaluated in the EIR, then the EIR will also be updated. New mitigation measures would not be required unless new significant impacts are identified.

Routine stream maintenance does not include emergency repair. A situation is considered an "emergency" if it is a sudden, unexpected occurrence involving a clear and imminent danger that demands immediate action to prevent or mitigate loss of or damage to life, health, property, or essential public services (Public Resource Code Section 21060.3).

Routine stream maintenance does not alter the flood conveyance or water supply capacity of a stream or canal. Large construction projects and Capital Improvement Projects (CIP) are not considered routine stream maintenance and are not addressed through the Stream Maintenance Program. For new CIPs, long-term maintenance impacts and any new mitigation will be analyzed under the CIP's separate future environmental review and compared to those impacts and mitigation previously evaluated for that reach of stream under the Stream Maintenance Program. New mitigation will only be required if the impacts of the maintenance under the CIP are in excess of impacts included in the Stream Maintenance Program for the same reach of creek. After the environmental review is completed for the CIP, the Stream Maintenance Program will be updated to incorporate any revisions to the mitigation program, and the implementation of the new maintenance and its annual reporting will be conducted in the same manner as indicated in Chapter 3.

The installation of new or major modification of fish ladders is not included in the Stream Maintenance Program. See also the "Overview of the Streams and Canals within the District's Jurisdiction" below for clarification on what areas are included or excluded from the Stream Maintenance Program.

C. STREAM MAINTENANCE ACTIVITIES

The following provides a brief discussion of the major activities addressed by the Stream Maintenance Program. For more information on these activities and why they are implemented, please refer to Chapter 2. In addition, the Stream Maintenance Program applies to more minor activities such as fence repair, trash removal, and removal of downed trees or other blockages.

1. Sediment Removal

Sediment removal is the act of mechanically removing sediment that has been deposited within a stream. Typically, sediment is removed when it: (1) reduces stream capacity, (2) prevents facilities or appurtenant structures from functioning as intended, or (3) impedes fish passage and access to fish ladders. Sediment removal can occur in the same physical area as vegetation removal.

2. Vegetation Management

The District removes vegetation in and adjacent to creeks and canals to maintain the ability of channels to function as flood protection facilities and canals to transport water. Vegetation removal can occur in the same physical area as sediment removal. In addition, vegetation is removed to meet local fire code requirements and to reduce combustible weeds and grasses on property adjacent to the streams within the District's jurisdiction. The control of invasive nonnative vegetation is another purpose for which the District undertakes vegetation control. Vegetation management can be accomplished through mowing, discing, hand clearing, or herbicide applications (depending on the environmental conditions of the site).

3. Bank Protection

Bank protection involves any action by the District to repair streambanks that are eroding as well as preventative erosion protection. The District implements bank protection when the problem (1) causes or could cause significant damage to a property or adjacent property, (2) is a public safety concern, (3) negatively affects transportation, (4) negatively affects beneficial uses of surface water, or (5) negatively affects riparian habitat. Repairs may take several forms ranging from the installation of "hard" structures (i.e., rock, concrete, sack concrete, gabions) to the use of "soft" structures (i.e., willow brush mattresses, log crib walls, pole plantings), or a combination of hard and soft structures. Bank protection also includes preventative maintenance to ensure that banks do not erode in the future. Such bank protection can reduce sedimentation and improve water quality.

Routine stream maintenance includes three major activities, as follows: (1) sediment removal activities that are designed to restore the flood conveyance capacity of existing District channels or associated features (e.g., tide gates), (2) vegetation management in and around streams and canals in the District's jurisdiction, including removal of

vegetation for flood capacity, access and fire control, and (3) bank protection activities necessary to protect District or other facilities. Routine stream maintenance also includes more minor maintenance activities, such as maintenance of revegetation sites, fence repair, trash removal, and removal of downed trees or other blockages from streams.

D. OVERVIEW OF THE STREAMS AND CANALS WITHIN THE DISTRICT'S JURISDICTION

For the purpose of this Stream Maintenance Program, "streams" are defined as natural watercourses and modified channels and canals that are within the District's jurisdiction. In this Stream Maintenance Program, streams include both the waterway and its immediate geographical corridor, including riparian corridors.

[Text describing the District's jurisdiction within the San Francisco Bay and Pajaro River watersheds is removed for brevity.]

E. RELATED PROGRAMMATIC DOCUMENTATION

Because this Stream Maintenance Program has been designed to guide the implementation of routine stream maintenance projects and activities over the long-term, it addresses stream maintenance at a general or "programmatic" level. As such, this document provides the guidelines and implementation measures that characterize how stream maintenance will be conducted by the District.

In addition to this document, several other programmatic requirements must be met before the Stream Maintenance Program can be implemented, as follows:

- **Program Environmental Impact Report**. Consistent with the California Environmental Quality Act (CEQA), an EIR will be prepared and certified by the District for this Stream Maintenance Program. The EIR will evaluate the potential environmental impacts of the Stream Maintenance Program and determine measures to mitigate impacts.

- **Long-Term Permits**. The District is seeking the approval of a long-term permit for routine stream maintenance activities in streams under the jurisdiction of the United States Army Corps of Engineers (USACE), including Waters of the United States and special aquatic sites (wetlands) pursuant to Section 404 of the Clean Water Act as well as Section 10 of the Rivers and Harbors Act. This Individual Permit would grant general authorization and set conditions for all routine stream maintenance activities subject to jurisdiction of the USACE. In addition, the District will be required to comply with requirements under Section 7 of the Federal Endangered Species Act (ESA). The California Regional Water Quality Control Boards (RWQCB) will also require compliance with Waste Discharge Requirements (WDR) permits and Section 401 of the Clean Water Act. The Santa

> Clara Valley is divided into two RWQCBs, based on major drainage areas. These are the San Francisco Bay RWQCB and the Central Coast RWQCB.

The District will also revise Memorandums of Understanding with the California Department of Fish and Game (CDFG) for stream maintenance activities. The CDFG will review routine stream maintenance activities for consistency with California's endangered species protection regulations.

The San Francisco Bay Conservation and Development Commission (BCDC) regulates activities occurring in tidally-influenced areas. The BCDC renewed Permit No. M77-113 on July 28, 2000, to cover the District's routine stream maintenance activities that occur in or near tidal waters of San Francisco Bay. The expiration date is June 1, 2005.

The permits and approvals from these agencies for routine stream maintenance are expected to last for a period of 5 to 10 years, after which time applications will be made for renewal of these permits and approvals.

In addition to these programmatic requirements for adoption and implementation of the Stream Maintenance Program, the District uses a variety of supporting documentation to guide stream maintenance activities….Examples include BMPs, the Maintenance Guidelines, and Fish Relocation Operation Guidelines….

Chapter 2
AN OVERVIEW OF STREAM MAINTENANCE ACTIVITIES

The Stream Maintenance Program provides long-term guidance for the implementation of routine stream maintenance work. Three major types of stream maintenance activities are sediment removal, vegetation management, and bank protection. This chapter provides an overview of these stream maintenance activities and their average frequency and extent on an annual basis. Also included in this Stream Maintenance Program are minor maintenance activities described in this chapter.

The projections for work area amount under the Stream Maintenance Program are based on approximately 20 years of historical data. The numbers provided are program-level projections of future stream maintenance activities and are not intended to represent the exact extent of work which will occur in the future. As described further below, stream maintenance activities can vary from year to year. There may be some future routine maintenance activities in streams and canals within the District's jurisdiction that are consistent with the descriptions of work and impacts overall but which were not specifically included in the District's projection of work areas. Maintenance at such sites is still included in the program as long as it does not result in significant environmental effects substantially different than those evaluated for the Stream Maintenance Program as a whole.

Routine maintenance occurs on a year-round basis. However, it is scheduled to avoid or minimize impacts to environmental resources. Typically, routine maintenance that requires the operation of heavy equipment in the channel is limited to the dry season.

A. SEDIMENT REMOVAL

1. Overview

Sediment removal is the act of mechanically removing sediment deposited within a stream. Typically, sediment removal is indicated when it (1) reduces capacity, (2) prevents facilities or appurtenant structures from functioning as intended, or (3) impedes fish passage and access to fish ladders.

The District's purposes in performing sediment removal activities are to ensure that a stream will continue to provide flood capacity and to ensure that appurtenant facilities are working as designed. Sediment is usually removed from modified channels. However, sediment is also sometimes removed from natural creeks on an occasional basis to provide proper functioning of outfalls, culverts, bridge crossings, and stream gauging stations, for example. Occasionally, sediment is removed from canals to maintain their function as water conveyance facilities. Sediment is removed from canals on an irregular basis, with similar equipment used for sediment removal from streams. Based on seven sediment removal projects undertaken in canals from 1992 to 2000, the average annual amount of sediment removed from canals is estimated to be less than 1,000 cubic yards. Sediment removal in canals takes place primarily in Almaden-Calero Canal, Coyote-Alamitos Canal, Coyote Canal, and Coyote Canal Extension.

In most cases, sediment deposition is a natural process that occurs where the stream gradient flattens out in the valley floor or where the gradient is otherwise flat over long reaches. In developed areas, this deposition affects flood flow capacities.

Typical equipment used for sediment removal includes excavators, draglines, loaders, and 10- or 20-cubic-yard dump trucks. If water must be bypassed around the site during work, water pumps and piping, and cofferdams of earth, gravel, sandbags, hay bales, rubber, or other appropriate material may be used. In some cases, a bypass channel or detention basin is appropriate to isolate a site. Saturated sediments may be temporarily placed adjacent to the work site to dry out before being removed to a landfill or to other suitable disposal or reuse sites. Most often, sediment removal projects are implemented in the dry season (summer). The District also implements BMPs to ensure that sediment removal projects have the least impact possible. The District's equipment and work methods are updated as new equipment or better methods become available. Sediment removal projects are also revised as new CIP are completed.

2. Sediment Removal Methods

The method of sediment removal is dependent on channel configuration and geometry, equipment reach and rate of production, channel type (tidal or nontidal, concrete or earth bottom), moisture content of the silt, ramp location, and access road width. For example, wide tidal reaches with a channel bottom of wet bay muds which will not support equipment require silt removal by a dragline or an excavator positioned on the top of the creek bank. This method requires wide roads for the equipment and for truck access.

Concrete-lined channels may be cleaned by pushing sediment into a pile with a bulldozer and using a loader to place the material in trucks for removal to an approved disposal site. The trucks are located at strategic points either in the channel bottom or at the top of bank depending on the method of routing the trucks. Another example is cleaning or creating a low-flow channel with excavation equipment working in the channel bottom, loading trucks either in the channel bottom or moving the sediment to trucks at the top of bank.

3. Annual Sediment Removal Activity

The District estimates that it removes an average of 80,000 cubic yards of sediment on about 16 miles of channel per year in Santa Clara County. This average includes both concrete-lined and earth-lined channels. This is an average annual quantity and will vary from year to year depending, in part, on rainfall conditions of the past season. The number of sediment removal sites each year also varies widely. Historical records show that the District removes sediment from an average of 19 sites annually but may work at as few as two sites or as many as 39 in a given year.

TABLE 2-1

[Table 2-1, which summarizes District-wide annual sediment removal activities between 1996 and 1999, is removed because it does not specifically apply to Stevens Creek. A summary of maintenance activity for Stevens Creek during the most recent fiscal year is attached.]

B. VEGETATION MANAGEMENT

1. Overview

Management of vegetation in and adjacent to creeks and canals is necessary to maintain the ability of channels to function as flood protection facilities and canals to function for water conveyance. Dense vegetation can adversely affect the ability of the channel to contain the flow of flood waters for which it was designed. Therefore, most flood protection facilities require some type of periodic vegetation control. Depending on the original design and the characteristics of the channel, the frequency of vegetation management varies from annually to every few years.

The District also plants and maintains revegetation or mitigation projects, often along creeks. In the first few years after initial planting, it is important to control weeds at revegetation sites to increase the number of native trees and shrubs which survive and to more quickly establish a self-sustaining plant community which provides wildlife habitat.

The control of invasive, nonnative plants is another purpose for which the District undertakes vegetation control. Plant species are targeted that are not native to this area of California and are known to aggressively spread. These plants can migrate into other areas where they can affect channel capacity as well as reduce native plant populations. This can lead to reduced channel capacity and overall habitat degradation. Current practice is to assign this a lower priority and do it on an ad hoc basis as it fits in with higher-priority work.

The District manages vegetation for other purposes including the protection of levees, and concrete linings from plant roots; meeting local fire codes requiring the control of combustible weeds and grasses; providing visual clearance to inspect the condition of a facility; and providing access along maintenance roads.

2. Vegetation Management Methods

Over the past 30 years, the District has continually revised vegetation management approaches to control vegetation on District facilities. This approach consists of utilizing three basic methods: hand removal (chain saws, weed-eaters, etc.); mechanical (mowing and discing); and chemical control through the use of herbicides. A method or combination of methods is chosen for each site depending on the maintenance requirements of the facility. Efficiency, economics, and the protection of public health and environmental resources are all considered in the selection of methods.

As an example, herbicides can often be a more effective vegetation control method when compared to mechanical or hand removal. This is because of their ability to spread into and damage the roots of the target plants, thus preventing resprouting. When treated with mechanical or hand methods, some woody plants, such as willows, will resprout with multiple stems. The multiple sprouts result in a greater flood protection problem and require annual control. With herbicides, annual retreatment is often necessary; however, the treatment area is greatly reduced, as only a small percentage of regrowth will occur. As a result, this program includes herbicides as the primary method by which vegetation is controlled in channels and on streambanks.

Herbicides are not broadcast sprayed across the channel, but are selectively sprayed at the plants targeted for removal by the design parameters of each particular stream reach. In some streams, only woody saplings (no greater than 2 inches in diameter at breast height) are removed in the target area, while other streams require removal of both herbaceous and woody vegetation. In upland areas, herbicides are sprayed on maintenance roads to provide a clear access area and on levee slopes to eliminate broadleaf weeds.

The District only uses herbicides according to the label directions and for uses approved by the United States Environmental Protection Agency (USEPA) and the California Department of Pesticide Regulation (DPR). Currently, the primary postemergent herbicides which the District uses are Roundup® Pro and Aqua Master® (formerly known as Rodeo®). These herbicides are formulations of the chemical glyphosate, which is a nonselective broad spectrum herbicide. Aqua Master® is approved for use in aquatic areas, whereas Roundup® Pro is not approved for application directly in water or to areas where surface water is present. Other herbicides which will be used by the District are shown in the following table.

TABLE 2-2

Herbicide Use for the Multiyear Stream Maintenance Program

Product Name	Chemical Type	Use	Average Annual Amount
Gallery	Isoxaben	Preemergent, selective to broadleaf weeds. Used on levee slopes and maintenance roads.	447 pounds
Garlon 3A	Triclopyr, triethylamine salt	Postemergent, selective to broadleaf weeds. Used on levee slopes.	5 gallons
Garlon 4	Triclopyr, triethylamine salt	Postemergent, selective to broadleaf weeds. Used on levee slopes.	62 gallons
Oust	Sulfometuron	Preemergent, nonselective. Used on access roads/firebreaks.	206 ounces

Pendulum	Pendimethalin	Preemergent, selective to grasses. Used on access roads/firebreaks.	3,576 pounds
Aqua Master (formerly known as Rodeo)	Glyphosate	Postemergent, nonselective. Approved for aquatic use. Used in channels.	750 gallons
Roundup Pro	Glyphosate	Postemergent, nonselective. Roundup used in upland areas on maintenance roads/firebreaks.	1,021 gallons
Surflan (AS)	Oryzalin	Preemergent, selective to grasses. Used on access roads, firebreaks, and landscape/ revegetation areas.	1,269 ounces
Telar	Chlorsulfuron	Preemergent, selective to broadleaf weeds. Used on levee slopes and maintenance roads.	2,140 ounces
Transline	Clopyralid	Postemergent, selective to specific broadleaf families. Some minor preemergent activity. Used for control of yellow star thistle on levee slopes/upland parcels.	16 gallons
Target Pro-spreader/ activator or Wilbur-Elias R-11 spreader activator		Surfactant used with Aqua Master®, Garlon, and Transline products.	310 gallons

In total, the District currently uses approximately 2,000 gallons of herbicides, 50 percent of which is Roundup® Pro and 35 percent is Aqua Master®. In addition, the District uses approximately 3,580 pounds of Pendulum and 450 pounds of Gallery per year. Appendix H contains a literature review of pesticides used by the District.

The Stream Maintenance Program includes the reinstatement of the use of herbicides as part of the Vegetation Management Program in the Pajaro River Basin. Herbicides are currently used as part of the Vegetation Management Program in the Santa Clara Basin, but their use was discontinued in the Pajaro River Basin (South County) at the direction of the District Board of Directors in 1974 because of complaints regarding drifting of herbicides into agricultural fields. In 1979, the District considered reinstating a herbicide program in the Pajaro River Basin. At that time, there was a general concern in the community over the use of herbicides, particularly the use of 2,4-D, and after public hearings, the District decided not to reinstate the use of herbicides in the Pajaro River Basin. As a result, the use of herbicides was also excluded on new federally-sponsored flood protection projects on Llagas Creek in the Pajaro River Basin.

Since that time, the District has revised its herbicide program to address environmental, health risk, and public safety concerns, but at the same time recognize that herbicides are a cost-effective means for maintaining flood protection and water supply facilities. Many of the improvements made to the District's herbicide program are described below:

- In 1980, the District discontinued the use of the herbicide 2,4-D.

- In 1986, the District switched to using herbicides in the sulfonylurea family which are applied at rates of ounces per acre, rather than previous herbicides which were applied at rates of pounds per acre. This step not only reduced the overall amount of herbicides being applied throughout the county, but also relied on using herbicides with a lower toxicity.

- In 1988, the District went beyond state requirements and required all District employees who handle pesticides to be certified as Qualified Applicators by the DPR. As Qualified Applicators, these employees are trained on pesticide laws and regulations, safety, and application methods and are required to receive annual training to keep updated in this field.

- Likewise, even before state requirements, the District required that a District Pest Control Advisor (PCA) prepare a pesticide use recommendation for any use of herbicide on District facilities. For the District's purposes, PCAs are required to have a relevant bachelor's degree, be trained in integrated pest management and groundwater protection, and continue to receive 40 hours of relevant training every 2 years.

- At the District, the PCA is required to conduct a field survey to assess the site conditions, types of weeds and nontarget plants, surrounding land uses, and potential wildlife use prior to writing a pesticide use recommendation. This information is used to make a recommendation with detailed instructions to the applicator regarding the type of herbicide, rate, equipment, treatment area identified on a map, target vegetation, vegetation to protect, and any special instructions relevant to the site and treatment.

- Certain types of herbicides were found as contaminants in groundwater in California's Central Valley. Although no restrictions were placed by the state on their use in Santa Clara County or on soil types found in Santa Clara County, the District voluntarily discontinued the use of certain preemergent herbicides on our facilities in 1993 to avoid any potential problems with groundwater. This practice continues today. PCAs receive groundwater training every 2 years from the DPR and receive routine updates in changes to the regulations. Though none of the regulations currently apply to this county, the District discontinues use of products that are known groundwater contaminants in other areas of the state.

- In 1994, the District voluntarily eliminated the use of residual preemergent herbicides on our groundwater recharge facilities. Today, only herbicides that are registered for use in aquatic areas are used at these locations.

- In 1996, the District retrofitted its spray trucks to include the Patchen WeedSeeker. This device utilizes a light sensor attached to the front of the spray equipment that detects the presence of chlorophyll (and, therefore, living plants) and controls individual spray heads. Instead of spraying the entire width of a facility as the spray truck passes over it, individual spray heads are turned on only as they pass over vegetated areas. This eliminates the treatment of bare ground and reduces the amount of herbicide applied by 20 to 90 percent. This equipment is primarily limited to use on flat areas where all vegetation needs to be controlled, such as maintenance roads.

- The District currently uses primarily Category III and IV herbicides. Under a ranking system developed by the USEPA, pesticide products are given an acute toxicity rating which is reflected in the warning label of the pesticide container. Category III is considered slightly toxic ("caution" warning on label) and Category IV is considered practically nontoxic (no warning language included on label).

As a result of these improvements, the District is now proposing that herbicide use be reinstated in the Pajaro River Basin. This change would require the following actions:

- The District's Board will need to adopt implementation of the Stream Maintenance Program, changing the maintenance practices in the Pajaro River Basin to include herbicides as a routine maintenance tool.

- The maintenance documents for the federally-sponsored Llagas Flood Protection Projects (PL-566 projects) will require amendment by the federal sponsoring agency, Natural Resources Conservation Service (NRCS), to include this activity.

Staff has been working with the Board and NRCS toward the implementation of this change. Both the Board and the NRCS agree this is a beneficial change.

Hand removal of vegetation is undertaken in a few locations where it is not possible to access the area with spray equipment. In some cases, the vegetation is sprayed with herbicides, and then approximately 6 months later, the dead material is removed by hand removal methods, if necessary. This latter category of work is referred to as follow-up hand removal. Follow-up hand removal of vegetation is only necessary when herbicide spraying is new to an area and there is a larger volume of dead vegetation created in the first year or two. In subsequent years, the amount of vegetative regrowth is reduced and follow-up hand removal is necessary much less frequently.

The five types of vegetation management in upland areas are: discing, mowing, herbicide application, hand removal, and removal of overhanging growth to provide maintenance access.

Upland discing occurs on upland parcels outside of the streambanks and is conducted to create firebreaks. Upland mowing consists of operating a flail mower to eliminate or reduce grasses that would cause a fire hazard during the summer. Mowing can occur from one to three times annually at each location, usually between May and October. Mowing is conducted on the inside slope of streambanks and outboard levees slopes to create a firebreak.

Upland herbicide spraying is used on levees, unpaved maintenance roads, and along some property lines. On levees, herbicides are used primarily to keep woody vegetation and broadleaf weeds from becoming established where they will interfere with flood flow capacity, damage the levees, or hinder their inspection. Weeds and grasses are sprayed on maintenance roads to clearly define and keep open the access route. Herbicide spraying along property lines assists in establishing a firebreak. Pre and postemergent herbicides are sprayed from a truck-mounted rig or by a controlled drop applicator.

Hand removal of vegetation is conducted in upland areas where mowers cannot access, and herbicides are either not practical due to steep terrain or not allowed. Hand removal of vegetation is generally used in upland areas along property lines to establish fire breaks. Removal of overhanging growth consists of pruning trees branches that impede access roads or hang over fence lines.

3. Annual Vegetation Management Activity

The frequency of vegetation management activities varies from semiannually to once every several years, depending on the method used. Herbicide spraying in stream channels is conducted July 1 through October 15. Removal of woody vegetation by hand is conducted July 1 through March 1. Hand removal in stream channels is conducted November through December.

Vegetation management occurs in creeks, canals, and adjacent uplands. On average, vegetation management work is annually performed on approximately 4,000 acres. Within this larger work area, the targeted treatment area consists of approximately 2,000 acres. These totals include the following approximate levels of activity:

- 923 acres of vegetation management work is conducted in 222 miles of stream channels with 132 acres of the total actually receiving treatment (585 work acres or 75 acres of treated area on 166 miles in the Santa Clara Basin, and 338 work acres or 57 acres of treated area and 56 miles in the Pajaro River Basin);

- 23 acres on which vegetation management work is conducted on 27 miles of canals with 6 acres of the total actually receiving treatment; and

- 3,021 acres of uplands on which vegetation management work is performed, with 1,885 acres actually receiving treatment. Upland vegetation management is outside of the area of inundation, and generally has a buffer of grass or vegetation on the slopes between the right of way and the stream.

Vegetation management activities are relatively the same from year to year. Slight variations in flood protection activities occur due to weather patterns. For example, historically, increases in some work activities occur during flood years, with decreases in other activities occurring during extended periods of drought. Right of way activities remain constant regardless of these weather patterns.

C. BANK PROTECTION

1. Overview

Bank protection involves an action by the District to repair streambanks that are eroding or are in need of preventative erosion protection. The District implements bank protection when the problem (1) causes or could cause significant damage to a property or adjacent property, (2) is a public safety concern, (3) negatively affects transportation or recreational use, (4) negatively affects water quality or beneficial uses, or (5) negatively affects riparian habitat. Repairs may take several forms from installing "hard" structures (e.g., rock, concrete, sack concrete, gabions) to "soft" structures (e.g., willow brush mattresses, log crib walls, pole plantings) or a combination of hard and soft structures.

Streambank erosion is a natural process, which mostly happens during major storm events. Erosion can occur because of hydraulic forces and geotechnical instabilities, and can be accelerated by human intervention and land uses. Accelerated erosion is typically a result of particular land uses that affect the stream corridor, including grazing, agriculture, and road and utility construction. Erosion of banks can result in increased sediment deposition, which can lead to decreased flood flow capacities and potential flood hazards. Erosion on banks may also cause vegetation and soil loss, damage to private or public property, transportation and utility impacts, safety hazards, and turbidity injurious to fish and aquatic life. Levee erosion may lead to failure of the structure and flooding.

Bank protection work may either occur as repair of an existing bank protection project which is failing, or as new work along a bank which is eroding. The new work is considered routine maintenance because it is either restoring the flood protection function of a modified channel or it is repairing a natural bank to its approximate condition prior to becoming an erosion problem.

Repair of existing bank protection structures occurs when these structures fail and are replaced with in-kind, in-place materials. New bank protection projects are those that repair or protect the watercourse from further degradation or erosion using the most appropriate method. This type of protection is considered maintenance if the work does not significantly alter the flood conveyance capacity of the streams.

Equipment used for bank protection may include excavators, dozers, cranes, loaders and 10- and 20-cubic-yard dump trucks, concrete trucks, and pumps and water trucks. If water must be bypassed around the site during repair work, water pumps and piping, and cofferdams of earth, gravel, sandbag, hay bales, rubber, or other suitable material may be used. In some cases, a bypass channel or detention basin is appropriate to isolate a site. Most often, bank protection projects are implemented in the dry season.

2. Bank Protection Methods

The general design criteria and plan for each of the bank protection methods used by the District are included in Appendix E [which is not included for brevity, but is available upon request]. In addition to these criteria, design of a particular bank protection project includes evaluation of other site-specific characteristics such as bank slope, shear stress, location (such as the inside or outside of a curve), soil type, flow velocity, characteristics of the channel adjacent to the site, and the available right of way. The site is evaluated for the repair method consistent with the characteristics of the site. Revegetation potential is also evaluated for each bank protection project. This potential is not only dependent upon the method of bank protection used, but also the physical properties of the stream where the repair is taking place.

In natural stream conditions where there are no flow capacity requirements, vegetation components for streambank repair are selected. In modified creek channels where the flow requirements must be retained (such as for the 100-year flood), this will often necessitate a roughness maximum which, depending on the channel design, may limit the vegetation component of the design.

A range of methods is used for bank protection, as can be exemplified by several District bank protection projects. Many of the following examples demonstrate how soft methods can be combined with harder methods when site conditions cannot maintain a purely natural solution.

- Log crib walls were used on Guadalupe River, downstream of Coleman and downstream of Woz Way and on Bodfish Creek upstream of Santa Teresa.

- Earth repairs with vegetated slopes were included in the Princevalle storm drain downstream of Chestnut, Sunnyvale East Channel downstream of Evelyn and Lower Penitencia Creek, downstream of Redwood Drive.

- Rock hybrids include Permanente Creek at Lundy Lane, Stevens Creek downstream of Fremont, and Los Gatos Creek downstream of Bascom Avenue.

- Cottonwood seedlings growing on articulated concrete mats are located on Guadalupe River upstream of Highway 880.

For all bank protection projects, the District makes an inspection of the stream upstream and downstream of a project site to determine if there is an identifiable cause of the erosion. In some cases, the cause of erosion is obvious, such as a blockage (e.g., downed tree) or weak streambanks of silt or gravel stratas. In other cases, a further inspection is conducted to determine if flows are being directed toward the bank from a source upstream, whether the channel invert is down cutting, or if illegal drainage is causing the problem. These factors can affect the bank protection approach implemented by the District.

3. Annual Bank Protection Activity

The District estimates that an average of 5,000 linear feet of banks may be repaired annually based on historical records, District experience, and current levels of funding. This is an average annual quantity and will vary from year to year. Facilities are inspected after the winter storms for damage and maintenance needs and a work plan is prepared. Under the Stream Maintenance Program, the District is committing to installing no more than 50 percent of future bank protection work using hardscape designs.

In the past 14 years, the total length of bank protection activities in an individual year ranged from approximately 1,500 to 13,000 feet. The District has completed an average of 38 bank protection jobs per year, based on historical records, but there is considerable deviation. For example, there were nine jobs in 1994 and 73 in 1987. A more detailed summary of historical bank protection activities is provided in Table 2-3.

TABLE 2-3

[Table 2-3, which describes bank protection activies from 1987-1999 is removed for brevity, because it does not apply specifically to Stevens Creek.]

Unlike sediment removal and vegetation management, the historical location of bank protection activities is not a good predictor of where future bank protection will be required. The quantity and location of bank protection activities varies greatly from year to year, based upon watershed conditions, degree of safety hazard, work load, budget, and of other work to be done in a given year.

D. MINOR MAINTENANCE ACTIVITIES

Minor maintenance activities included in this Stream Maintenance Program are: trash removal at trash racks and more generalized locations; repair and installation of fences and gates; grading and other repairs to restore the original contour of access roads and levees; grading small areas without vegetation above streambanks to improve drainage and reduce erosion; repair of structures with in-kind materials within the same footprint (such as replacement of concrete linings, culverts, pipes, valves, or similar structures); cleaning and minor sediment removal at stream gages, outfalls, culverts, flap gates, tide gates, inlets, grade control structures, fish ladders, and fish screens; graffiti removal; tree pruning along maintenance roads and fence lines to provide access and to remove hazards; irrigation, weeding, replanting, and other types of ongoing maintenance at mitigation sites; removal of obstructions to flow in the immediate vicinity (not to exceed 100 feet) of bridges, streamflow measuring stations, box culverts, storm drain outfalls, and drop structures to maintain functions of such structures; removal of trees or branches that are in imminent danger of falling, fallen trees, and associated debris to maintain channel design capacity; and ground squirrel and rodent control with traps, smoke bombs, and pesticides.

PERMITS

The following regulatory permits have been obtained for routine maintenance activities that fall under the Stream Maintenance Program described herein, including activities on Stevens Creek. The actual permits are available upon request or may be downloaded from the following site:

http://www.valleywater.org/Water/Technical_Information/Technical_Reports/index.shtm#smp

Bay Conservation and Development Commission
California Department of Fish and Game
Central Coast Regional Water Quality Control Board
United States Army Corps of Engineers
National Marine Fisheries
San Francisco Regional Water Quality Control Board
United States Fish and Wildlife Service

Dennis

AUGUST 1989

PAJARO RIVER, CALIFORNIA
UVAS CREEK LEVEE AT GILROY

Santa Clara County, California

OPERATION AND MAINTENANCE MANUAL

US Army Corps
of Engineers
Sacramento District

OPERATION AND MAINTENANCE MANUAL

PAJARO RIVER, CALIFORNIA
UVAS CREEK LEVEE AT GILROY

AUGUST 1989

January 30, 1991

District Engineer
San Francisco District
U.S. Army Corps of Engineers
211 Main Street
San Francisco, CA 94105-1905

Ladies and Gentlemen:

The semi-annual report for the period of May 1, 1990 to October 31, 1990 for the Uvas Creek Levee Project, Santa Clara County, California, is as follows:

a) The mitigation plantings are still under contract for the 2-year establishment period that began May 24, 1989. We do anticipate minor vegetation removal in the channel between Thomas Road and Hollister Road in the next period.

b) During this report period, there were no major high water periods.

c) In our last report, we noted that the bike trail has several extensive longitudinal cracks in the pavement along Gilroy High School. In subsequent inspections we found that pavement cracking extends over most of the bike trail. The City of Gilroy is responsible for maintenance of the bike trail, but their contention is that the cracks stem from improper construction of the paved bike trail. To date, the Corps has not responded to this point.

d) No permits have been issued for improvements or construction within the project right of way.

e) The anticipated minor vegetation removal work indicated under item a) of the last semi-annual report was not done due to other priorities. This work is planned to be done for the next period.

f) The fiscal statement of the Superintendent's operations for the current period is attached. The total cost for work performed was $1,192.50. The only work needed was the mechanical mowing of weeds along the levee.

Sincerely,

ORIGINAL SIGNED BY

Jose L. Ortiz
Supervising Engineer
Maintenance Planning Division

Attachment

cc: J. Cooper, D. Erling (w/attachment), J. Ortiz, G. Stevens, M. Wander,
Bruce Wilson

JLO:pal:JL01-29.mem

SANTA CLARA VALLEY WATER DISTRICT

```
                         *89/90 <FLOOD CONTROL>
                         ----------------------
Date: 11/21/90     * WMS WORK ORDER COST (SUMMARY) REPORT *     Page:   1
==========================================================================
Work Order/   Work Order Description/      Last        Unit
 Resource      Resource Descript.        Work Date   Quantity      Cost
==========================================================================

  5089204....UVAS CREEK - MECHANICAL MOWING
  -------    ---------------------------------------------------

      E   7603  MOWER TRACTOR            05/14/90          14.0 $     477.4
                                                                 ---------
                                     + RESOURCE TYPE SUBTOTAL: $     477.4


      L   7424  CROXEN, W.               05/14/90          14.0 $     715.1
                                                                 ---------
                                     + RESOURCE TYPE SUBTOTAL: $     715.1


                                        ------------------       ---------
                                        WORK ORDER SUBTOTAL:  $     1192.5

                 * * * * * * * * * * * * * * * * * * * *


                 WORK ORDER(s) GRANDTOTAL:  $    1192.5
                 ======================    ==========

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                              - END OF REPORT -
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EXHIBIT A

PROJECT LOCATION MAP

OPERATION AND MAINTENANCE MANUAL
FOR
PAJARO RIVER, CALIFORNIA
(UVAS CREEK LEVEE AT GILROY)
SANTA CLARA COUNTY, CALIFORNIA

SACRAMENTO DISTRICT
U.S. ARMY CORPS OF ENGINEERS

3229

BLOSSOM HILL PRINTING CO. - SAN JOSE, CA 95123

Gary Stevens

Santa Clara Valley Water District

Inter-Office Memo

SUBJECT: Uvas Creek Levee Project (Corps)

DATE: 8-7-89

Per my conversation with John Sisley (Corps of Eng)
The contract expiration date for maintenance of this project is May 24th, 1991. The Contractor is Karlskint - Krum
If further info is needed John can be reached at (916) 551-3050

PLEASE REPLY TO ⟶ SIGNED Mark E Wande

DATE

SIGNED

SEND WHITE AND PINK COPIES WITH CARBONS INTACT. PINK COPY IS RETURNED WITH REPLY.

FC-141 (11-1-82)

3229

BLOSSOM HILL PRINTING CO. - SAN JOSE, CA 95123

Santa Clara Valley Water District

Inter-Office Memo

TO Gary Stevens

SUBJECT: Uvas Creek Levee Project (Corps)

DATE: 8-7-89

Per my conversation with John Sisley, (Corps of Eng)
The contract expiration date for maintenance of this project is May 24th, 1991. The Contractor is Karl Kiul-kim
If further info is needed John can be reached at (916) 551-3050

PLEASE REPLY TO ⟶ SIGNED Mike Wade

DATE

SIGNED

SEND WHITE AND PINK COPIES WITH CARBONS INTACT. PINK COPY IS RETURNED WITH REPLY.

FC-141 (11-1-82)

RETURN TO SENDER

OPERATION AND MAINTENANCE MANUAL

PAJARO RIVER, CALIFORNIA
UVAS CREEK LEVEE AT GILROY
SANTA CLARA COUNTY, CALIFORNIA

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I Sample Permit for Uses of Right-of-Way
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SECTION I - INTRODUCTION

1-01. Project Authorization. A project to raise and lengthen the existing levee on the left bank of Uvas Creek (formerly Carnadero Creek) to provide flood protection to the City of Gilroy was authorized by the Flood Control Act of 1944 (Public Law 78-534), as part of the improvements within the Pajaro River Basin. These improvements are outlined in House Document No. 505, Seventy-eighth Congress, Second Session. Recreational trail use of flood control features was included as authorized by the Flood Control Act of 1962 (PL 87-874). The authorized project was modified by a Post Authorization Change Notification Report dated 9 March 1982.

1-02. Project Location. Uvas-Carnadero Creek is located in southern Santa Clara County and drains an area of 89 square miles with its headwaters in the Santa Cruz Mountains. Upstream of U.S. Highway 101 the stream is known as Uvas Creek, and downstream as Carnadero Creek. Uvas-Carnadero Creek is approximately 32 miles in length. The creek generally flows southeast to join the Pajaro River about 6 miles south of the City of Gilroy. The Pajaro River flows westerly and empties into Monterey Bay. The project location map is included as EXHIBIT A.

1-03. Description of Project Works. The authorized plan of improvement for Uvas Creek consisted of modification of the existing levee on the left bank from river mile 6.65 to river mile 8.85 (measured from the Pajaro River) and the construction of a short tie-in levee. This plan was to afford protection to the City of Gilroy from all floods up to the 100-year flood. The reformulated plan for the Uvas Creek levee consists of a levee designed for standard project flood protection along the left bank of Uvas Creek from approximately 2,000 feet downstream of Thomas Road to approximately 3,500 feet upstream of Miller Avenue. The plan includes the relocation of Thomas Road bridge and the raising of Miller Avenue. Several relatively minor utility relocations were also necessitated by project construction. Recreation facilities consisting of an asphalt paved bike trail, a graded earth hiking trail, and some landscaping are included in the plan. Also included are the planting of trees and shrubs to mitigate fish and wildlife damages. The project is fully described in *Pajaro River, California, Uvas Creek Levee at Gilroy, General Design Memorandum, November 1984,* approved 17 June 1985.

1-04. Purpose of Manual. This manual has been prepared to provide local interests with information pertinent to the operation and maintenance of the project facilities and to ensure that structures and facilities provided by the United States for flood protection and recreation are continuously maintained and operated as necessary to obtain maximum benefits. This manual was prepared by the Sacramento District, U.S. Army Corps of Engineers, which is responsible for the project engineering and design and construction. The San Francisco District, U.S. Army Corps of Engineers is responsible for monitoring project operation and maintenance after construction.

1-05. Definitions. Definitions applicable to this manual are:

District Engineer: The chief executive of the San Francisco District, U.S. Army Corps of Engineers, 211 Main Street, San Francisco, California, 94105-1905. In certain contexts, the term may be construed to include representatives of the District Engineer.

Superintendent: The local official(s) with responsibility (pursuant to regulations) for developing and maintaining, and directly in charge of, an organization charged with the efficient operation and maintenance of flood control facilities and/or recreation features provided by the United States.

Regulations: Part 208, Chapter II, Title 33, Code of Federal Regulations. These are the rules that govern local interests in operating and maintaining flood control projects. (See EXHIBIT B.)

Right (or Left) Bank: The right (or left) side of a stream or waterway as the viewer faces downstream.

1-06. Flood Flows. For purposes of this manual, the term "flood" or "high water period" shall refer to flows in which the water surface is impinging on the project levee. A staff crest gage to measure maximum annual stages for monitoring the performance of the completed project is being installed on the left bank just upstream of Thomas Road bridge.

1-07. Construction Data and Contractors. Construction contracts required by the U.S. Army Corps of Engineers to complete the project works were as follows:

A. Levee Improvement and Construction - Phase I; Contract No. DACWO5-87-C-0098; Specification No. 7495; F&M Engineering Contractors, Inc., Aptos, CA; 28 September 1987 to 24 August 1988.

B. Levee Improvement and Construction - Phase II; Contract No. DACWO5-88-C-0052; Specification No. 8350; El Camino Construction Company, Fresno, CA; 6 September 1988 to 30 April 1989.

C. Landscaping, Pajaro River; Contract No. DACWO5-88-C-0059; Specification No. 8453; Karleskint-Crum, Inc., San Luis Obispo, CA; 23 September 1988 to 24 May 1989 + 2-year maintenance period.

SECTION II - LOCAL COOPERATION

2-01. Assurances of Local Cooperation. Prior to the start of construction, the local sponsors for flood control and recreation entered into contracts of local cooperation.

A. Flood Control. The non-Federal sponsor for the flood control portion of the project is the Santa Clara Valley Water District (SCVWD). The Local Cooperation Agreement (LCA) for the flood control element of the project was executed on 25 June 1987. (See EXHIBIT C.)

B. Recreation. The non-Federal sponsor for the recreation portion of the project is the City of Gilroy. The LCA for the recreation features was executed on 27 July 1987. (See EXHIBIT D.)

2-02. Local Cooperation Requirements.

A. The authorized local cooperation requirements for the Pajaro River project are:

1) provide without cost to the United States, all lands, easements and rights-of-way necessary for the construction of the project;

2) make at their expense all necessary changes in existing improvements, including utilities and highway and railway bridges;

3) hold and save the United States free from damages resulting from construction of the works; and

4) maintain and operate all works after completion in accordance with regulations prescribed by the Secretary of the Army.

B. A Post Authorization Change (PAC) Notification Report approved by OCE in August 1982 modified the requirements of local cooperation. The changes included 50 percent cost sharing of recreation features, application of the reimbursement clause in Section 3 of the 1936 Flood Control Act, and additional requirements as a result of subsequent Federal legislation for flood control projects.

C. The Water Resources Development Act of 1986 (PL 99-662) further specified the flood control cost sharing requirements applicable to the project. In addition to the above cited requirements of local cooperation, the local sponsor is required to make a cash payment of not less than 5 percent of total project costs during the period of construction. In the event the value of lands, easements, rights-of-way and relocations is less than 20 percent of total project costs, the local sponsor is required to make an additional cash contribution so that the total contribution is equal to 25 percent of total project costs. The total non-Federal contribution is limited to 50 percent of total project costs.

2-03. Transfer of Responsibility. Responsibility for operating and maintaining the completed project works is formally conveyed to the local sponsors upon completion of each construction contract. Letters of acceptance from the local sponsors are attached as EXHIBIT E.

SECTION III – OPERATION & MAINTENANCE

3-01. General Provisions. The general provisions of Regulations (See EXHIBIT B) are as follows:

A. The structures and facilities constructed by the United States for local flood protection shall be continuously maintained in such a manner and operated at such times and for such periods as may be necessary to obtain the maximum benefits;

B. The State, political subdivision thereof, or other responsible local agency, which furnished assurance that it will maintain and operate flood control works in accordance with regulations prescribed by the Secretary of the Army, as required by the law, shall appoint a permanent committee consisting of or headed by an official hereinafter called the "Superintendent," who shall be responsible for the development and maintenance of, and directly in charge of, an organization responsible for the efficient operation and maintenance of all of the structures and facilities during flood periods and for continuous inspection and maintenance of the project works during periods of low water, all without cost to the United States;

C. A reserve supply of materials needed during a flood emergency shall be kept on hand at all times;

D. No encroachment or trespass which will adversely affect the efficient operation or maintenance of the project works shall be permitted upon the rights-of-way for the protective facilities;

E. No improvement shall be passed over, under, or through the walls, levees, improved channels or floodwalls, nor shall any excavation or construction be permitted within the limits of the project rights-of-way, nor shall any change be made in any feature of the works without prior determination by the District Engineer of the Department of the Army or his authorized representative that such improvement, excavation, construction, or alteration will not adversely affect the functioning of the protective facilities. Such improvements or alterations as may be found to be desirable and permissible under the above determination shall be constructed in accordance with standard engineering practice. Advice regarding the effect of proposed improvements or alterations on the functioning of the project and information concerning methods of construction acceptable under standard engineering practice shall be obtained from the District Engineer or, if otherwise obtained, shall be submitted for his approval. Drawings or prints showing such improvements or alterations as finally constructed shall be furnished to the District Engineer after completion of the work;

F. It shall be the duty of the Superintendent to submit a semiannual report to the District Engineer covering inspection, maintenance, and operation of the protective works;

G. The District Engineer or his authorized representatives shall have access at all times to all portions of the protective works;

H. Maintenance measures or repairs which the District Engineer deems necessary shall be promptly taken or made;

I. Appropriate measures shall be taken by local authorities to ensure that the activities of all local organizations operating public or private facilities connected with the protective works are coordinated with those of the Superintendent's organization during flood periods;

J. The Department of the Army will furnish local interests with an Operation and Maintenance Manual for each completed project, or separate useful part thereof, to assist them in carrying out their obligations under this part.

3-02. Levee Maintenance. Inspections shall be made at intervals not to exceed 90 days to ensure that the following maintenance measures are being effectively carried out:

A. No unusual settlement, sloughing, or material loss of grade has taken place. In all cases where the levee grades settle below the design elevations, the crown grade must be raised to the original designed grade. All objectionable material is to be removed, and the levee surface scarified to a depth of approximately six inches. New fill material similar to that used in the original construction is to be placed and compacted in layers to obtain design grades. Where service roads have settled and are to be repaired, gravel that is salvageable may be removed, stockpiled and reused. Surfaces of levee roads are to be maintained in original condition. Service roads paved with asphaltic concrete shall be restored to meet original specifications. All holes, soft areas and damaged road surfaces are to be repaired annually;

B. No caving has occurred on either the landside or waterside of the levee which might affect the stability of the levee section;

C. No seepage, saturated areas, or sand boils are occurring;

D. Toe drainage systems and pressure relief wells are in good working condition, and that such facilities are not becoming clogged;

E. Drains through the levees and gates on said drains are in good working condition;

F. No revetment work or riprap has been displaced, washed out, or removed;

G. No action is being taken, such as burning grass and weeds during inappropriate seasons, which will retard or destroy the growth of sod;

H. There is no unauthorized grazing or vehicular traffic on the levee;

I. Encroachments are not being made on the levee rights-of-way which might endanger the structure or hinder its proper and efficient functioning during times of emergency;

J. Trees and wild growth are removed as necessary to allow inspection of the levee;

K. Burrowing animals such as muskrats, ground hogs, ground squirrels, moles and gophers found in the levee should be exterminated. Dens and runways formed within the levee by burrowing animals are frequently the cause of levee failure during flood stages. Advice concerning methods for controlling these animals can be obtained from the County Agricultural Agent;

L. Service roads shall be maintained in such condition that they will be accessible at all times to all vehicles used in maintenance or flood fighting.

3-03. Riprap Maintenance. Displaced riprap is to be replaced as soon as practical after the recession of flood water and before the next flood run-off. Furthermore, trees and wild growth are to be removed as necessary to prevent displacement of riprap.

3-04. Channel Maintenance. Inspections shall be made at intervals not to exceed 90 days to ensure that the following maintenance measures are being effectively carried out:

A. The channel or floodway is clear of debris;

B. The channel or floodway is not being restricted by the depositing of waste materials, building of unauthorized structures or other encroachments. Particular attention should be given to operations of any nature that would affect flow conditions within the limits of the project;

C. The capacity of the channel or floodway is not being reduced by the formation of shoals or by excessive vegetal growth. Particular attention should be given to changes in the channel bed which would interfere with the free flow of flood waters or cause the banks to scour, and to the location, extent and size of vegetation growth;

D. Approach and egress channels adjacent to the improved channel or floodway are sufficiently clear of obstructions and debris to permit proper functioning of the project works;

E. Shoaling or aggradation at the inlets or outlets of side drainage structures does not occur. All drains shall be kept open and unobstructed at all times. Particular attention should be given that banks are not being damaged by rain or wave wash, and that no sloughing of banks has occurred.

If any adverse conditions are disclosed, immediate steps will be taken to remedy them. Measures must also be taken to promote the growth of grass on bank slopes. Periodic surveys should be conducted every year to determine extent of sediment build-up on the channel invert, and to develop hydraulic computations to check channel capacities. These surveys should include stations which are plotted against the designed cross-sections.

3-05. Downstream Channel Maintenance. In addition to the requirement for channel maintenance adjacent to the project levee, the Uvas-Carnadero Creek channel must be maintained from the downstream terminus of the project levee to Hollister Road. This entails removing channel constrictions due to aggradation, vegetal growth, down timber, etc. The channel is to be maintained in the same general condition as indicated in the photographs attached as EXHIBIT F.

3-06. Recreation Facilities. The City of Gilroy is responsible for all operation and maintenance of the recreation facilities. The recreation trails are to be kept in good repair. Specifically, the bike path and hiking trail maintenance will include repairing the surface, clearing obstacles, pruning vegetation and maintaining warning signs. No encroachments should be permitted. The City of Gilroy will be responsible for maintaining the plantings done for recreation landward of the levee. There shall be no accumulation of trash or debris throughout the trail. Fencing shall be repaired or replaced as required. Gates and bollards shall be kept in good working order and padlocks, or other means, shall be maintained for proper security measures. Weed abatement should meet the requirements of the Gilroy Fire Department.

3-07. Landscaping Maintenance.

A. Mitigation Plantings. The City of Gilroy is responsible for maintaining the mitigation plantings and land waterward of the levee. If vegetation is removed from the mitigation area, an equal number of the same species of vegetation removed will be replanted in the mitigation area by the City of Gilroy for the first three-year maintenance period. Replacement of waterward plantings will not be required where plant loss occurred to normal stream alteration and where such alteration in terrain was significant and replanting is deemed impractical. Replacement will be required of vegetation lost to vandalism, fire, flooding, bank erosion, and stressful conditions. These plantings are for the purpose of mitigating fish and wildlife damages caused by the project. The plants are to be watered, weeded, cultivated, sprayed, pruned, and replaced as necessary to keep them healthy and attractive. The selection and use of pesticides and herbicides is to be made in compliance with applicable Federal, State and local regulations. Pruning is to be limited to the minimum that is necessary to remove injured limbs and branches, to shape the trees and to shape the shrubs for best serving the purpose for which they were planted. All cuts shall be made flush, leaving no stubs. In all instances, good pruning practices should be followed. The irrigation systems shall be in a functioning condition. Sprinkler heads are to be free from clogging or corrosion. The system should be flushed at least once a year to clear the pipes. This should be done at the beginning of the irrigation period. Any item broken or damaged should be replaced to ensure the proper functioning of the system. Landscaping must be maintained such that the aesthetic value to the channels and the local area is not diminished.

B. Recreation Plantings. The City of Gilroy is responsible for maintaining the trees planted landward of the project levee. These plants are to be watered, weeded, cultivated, sprayed, pruned, and replaced as necessary to keep them healthy and attractive. The selection and use of pesticides and herbicides is to be made in compliance with applicable Federal, State and local regulations. Pruning is to be limited to the minimum that is necessary to remove injured limbs and branches, to shape the trees for best serving the purpose for which they were planted. All cuts shall be made flush, leaving no stubs. In all instances, good pruning practices should be followed.

SECTION IV - INSPECTION & MANAGEMENT

4-01. The District Engineer. The District Engineer is the authorized engineer, or authorized representative, of the U.S. Army Corps of Engineers, San Francisco District. The following assistance shall be furnished by the District Engineer to the local interests:

A. Furnish "As Constructed" drawings of the project works upon issuance of this manual;

B. Make periodic inspections of the project works and notify the local interests of any repairs or maintenance measures which the District Engineer deems necessary in addition to measures taken by the Superintendent;

C. Submit a request to the Office of the Chief of Engineers, all cases of noncompliance with full details thereof, for determination of corrective measures to be taken;

D. Make prior determination that any proposed encroachment, improvement, excavation, construction within the rights-of-way, or alteration of the project works, will not adversely affect the functioning of the protective facilities;

E. Assist local interests as may be practicable, in their duties of ascertaining storm developments having flood-producing potential, assembling flood-fighting operations to the extent permitted by existing laws and regulations;

F. Assist, advise, or otherwise suggest the course of action to be taken if the project works has sustained serious damage which is beyond the capability of the local interests to repair.

4-02. The Superintendent. The Superintendent is the person appointed by the local interests to be directly in charge of an organization which will be fully responsible for the continuous operation and inspection of the project works. In accordance with provisions of Regulations (See EXHIBIT B), the general duties of the Superintendent include the following:

A. Key personnel shall be trained in order that regular maintenance work may be performed efficiently and to ensure that unexpected problems related to flood control may be handled in an expeditious and orderly manner. The Superintendent should have available the names, addresses, and telephone numbers of all his key personnel and a reasonable number of substitutes. These persons should, in turn, have similar data on all of those who will assist them in the discharge of their duties. The organization of key personnel should include the following:

1) An assistant to act in the place of the Superintendent in case of his absence or indisposition;

2) Work supervisors in sufficient number to lead maintenance patrol work of the levee, inspect the channel, and operate the structures properly during flood periods. High qualities of leadership and responsibility are necessary for these positions;

B. The Superintendent shall maintain a file of reports, records and drawings concerning the project works readily available at all times to the District Engineer;

C. In accordance with the provisions of Regulations 208.10(a)(4), no encroachment or trespass which will adversely affect the efficiency of the operation and maintenance of the project works shall be permitted on the rights-of-way for the protective facilities. The Superintendent will, therefore, cause notices to be posted at places along the project rights-of-way directing public attention to this regulation.

The Superintendent shall take whatever action is necessary under his own authority to remove any unauthorized encroachment or to prosecute the trespassers;

D) In accordance with the provisions of Regulations 208.10(a)(9), the Superintendent will, during periods of flood flow, coordinate the functions of all agencies, both public and private, that are connected with the protective works. Arrangements shall be made with the local law enforcement agencies, street departments, railroad, utilities and any other concerned local interests for developing a coordinated flood-fighting program. An outline of this program shall be filed with the District Engineer;

E) In accordance with the provisions of Regulations 208.10(b)(1), the Superintendent will be fully responsible for maintenance, repairs and the methods used to accomplish them. All repairs shall be made in accordance with standard engineering practice, to line, grade and in accordance with details shown on the "As Constructed" drawings for the project works. No change or alteration shall be made in any feature of the project works without prior determination by SCVWD and the District Engineer that such alteration will not adversely affect the stability and functioning of the protective facilities. Plans and specifications of all changes or alterations that may be proposed by the Superintendent shall be submitted to SCVWD for forwarding to the District Engineer for investigation and approval before commencement of the work.

4-03. Field Inspections.

A. The Superintendent is responsible to ensure that periodic inspections of the project are conducted. These inspections shall determine the condition of the various components of the project and disclose any areas that require repair or replacement. Regulations provide that such inspections shall be made just before the beginning of the flood season, immediately after each major high water period, otherwise at intervals not exceeding 90 days. In addition, inspections are to be made after every earthquake which occurs within 200 miles and has a Richter magnitude of 5 and above. Inspections are also required after smaller earthquakes if specific reports of damage are received.

B. During the interim period, pending completion of the project, the Corps of Engineers will conduct inspections necessary for completion of the semiannual report. SCVWD will be required to designate a representative to accompany the Corps personnel on these inspections. SCVWD's representative will furnish the Corps all necessary keys to locks required to provide access to all of the project rights-of-way.

C. The suggested checklists and instructions, shown as EXHIBIT G, should be followed to ensure that features of the project works are not overlooked during inspections. These checklists are to be used to implement required repairs and to prepare the semiannual reports.

D. During inspections, particular attention is to be paid to the following:

1) Condition of the main channel noting obstacles, dikes, debris, vegetation and sediment that will substantially reduce capacity;

2) Condition of levees and riprap and any recent repairs;

3) Condition of structures, culverts, and flap gates;

4) Condition of access and service roads, especially to areas where problems are likely to develop;

5) Availability of emergency supplies (quantity, location, condition);

6) Communications with operating personnel (telephone, radio);

7) Availability of personnel on short notice (operators, labor, etc.).

4-04. **Semiannual Reports.** In accordance with Paragraph 208.10(a)(6) of the General Provisions of Regulations, the Superintendent shall submit a semiannual report to the District Engineer within a 10-day period following 1 October and 15 April. The report will comprise statements of the following:

A. The physical condition of the protective works as summarized from logs of inspections;

B. Flood-fighting activities during the report period and the behavior of the protective works during floods;

C. Prosecutions for encroachment or trespass;

D. Maintenance measures taken (date, temporary measures taken, permanent repairs, etc.);

E. The cost of maintenance and operation for the report period; and

F. Any unusual, abnormal, or unexpected conditions or occurrences bearing on the stability or effectiveness of the protective works.

EXHIBIT H shows a suggested form for submitting the semiannual report. The report is to be submitted to the District Engineer, San Francisco District, U.S. Army Corps of Engineers, 211 Main Street, San Francisco, California 94105-1905.

4-05. Encroachment Permits.

A. Improvements for local flood protection and the associated rights-of-way are owned by SCVWD, and are operated and maintained by them in accordance with the Regulations. Paragraph 208.10(a)(5) of Regulations provides that permits for use of the rights-of-way of flood control projects so owned, operated, and maintained are subject to the approval of the District Engineer.

B. Applications for use of flood control project rights-of-way should be addressed to SCVWD. SCVWD will forward the application to the District Engineer together with recommendations and the reasons for encroachment. It is suggested that a draft copy of the permit be included with the application and recommendations so any objectionable features of the permit can be eliminated prior to its approval. The proposed permit should state the exact use of rights-of-way for which permission is being required and any conditions or restrictions that apply. It should be signed by the applicant and a representative of SCVWD. A drawing, sketch, or detailed plan as may be required to show the exact location, nature of the work to be permitted, and the proposed method of its execution should be attached to the copy of the proposed permit.

C. If the use proposed by an applicant could result in damage to the rights-of-way or associated flood control structures, it is suggested that the applicant be required to post a bond to protect the local interests from any costs for removal, repair, or restoration. This bond will guarantee that the permittee faithfully meets conditions imposed by the approved permit. In such cases, the permit would state the amount and conditions of the bond.

D. In cases involving construction or other work in the project rights-of-way, it will be necessary that the District Engineer or his representative inspect the work. The local interest may also wish to make inspections.

E. SCVWD may be responsible for obtaining permits needed for major repairs. A permit may have to be obtained from CESPN and a Streambed Alteration Agreement from the California Department of Fish and Game prior to any major work in the channel. SCVWD should coordinate all major repair efforts with CESPN, the California Resources Agency, and the U.S. Fish and Wildlife Service to avoid environmental problems which may arise with the permit Public Notice.

F. A permit format that has been utilized by a number of cities and flood control districts and agencies is attached as EXHIBIT I.

SECTION V - COMBATING FLOODS

5-01. Suggested Methods. Most of the methods described herein have been developed during many years of experience with the various problems that often arise during periods of high water. They are not intended to restrict the Superintendent, or others concerned, to a rigid set of rules for every condition that may arise. They should be considered as general guides to procedures that have been effective during past floods, and in themselves or with modifications indicated by an ongoing emergency, would probably be effective in the future. The following methods are primarily concerned with the earthen portions of the levee system. If problems not covered by these suggestions arise where the Superintendent is in doubt as to the procedure to be taken, he will be expected to consult the State Department of Water Resources and follow standard engineering practices in meeting the situation. It should be noted that it is much better to be over-prepared for a "flood fight" than it is to find at the last moment that preparations were incomplete or unsatisfactory. Confidence of the persons and firms protected is a valuable asset that should not be carelessly lost through inefficient operation of the protection system in time of emergency.

5-02. Inspections. Immediately upon receipt of information that high water is imminent, local interests responsible for maintenance should form a skeleton organization, capable of quick expansion, and assign individuals (Work Supervisors) to have charge of definite reaches of the levee. As his initial activity, each Supervisor should go over his entire sector and parts of adjacent sectors, making a detailed inspection, particularly with reference to the following matters:

A. Sector limits; ascertain that the dividing line between sectors is plainly determined and, if necessary, marked;

B. Condition of levee and recent repairs;

C. Condition of culverts, flap gates, and sluice gates;

D. Transportation facilities; roads, rail and water communications;

E. Material supply; quantity, location, and condition;

F. Communications; locate and check all necessary telephones in the sector.

5-03. Preliminary Activities. After the initial inspection has been made, each Work Supervisor should recruit a labor crew and provide it with tools such as shovels, axes, wheelbarrows, etc. In addition, bulldozers, scrapers, trucks, etc. should be located and made ready for use in case of emergency. Immediate action should be taken to perform the following work:

A. Fill up holes or washes in the levee crown, slopes, and landside berms. Where new construction has been completed during the year, rain washes and deep gullies may have developed. While the levee is new, preparations should be made in advance to combat wave wash along the exposed reaches;

B. Repair gaps where road crossings have been worn down and the levee is below grade. In filling the road crossings, it may be necessary to obtain material from landside borrow pits, in which case excavation of the material should be kept at least 50 feet from the toe of the levee. Any filling done in this connection should be tamped in place and, if in an exposed reach, subject to wave wash, the new station should be faced with bags of sand;

C. Repair and close all flap gates on culverts and see that they are seated properly before they are covered with flood waters;

D. Ascertain that all roads to and along the levee are in a good state of repair. The Superintendent should obtain assistance from the city and/or county road forces to have all roads put in first-class condition;

E. Locate necessary tools and materials (sacks, sandbags, brush, lumber, lights, etc), and distribute and store the same at points where active maintenance is anticipated;

F. Check and obtain repair of all telephone lines necessary for operation; obtain lists of all team forces, motorboats, motor cars, and truck transportation that can be made available;

G. Make thorough arrangements with reliable citizens of the community for the supply of transportation, subsistence, and shelter for the necessary labor;

H. Remove all dynamite and explosives of any kind from the vicinity of the levee.

5-04. **Levees.** A levee is in danger whenever there is water against it. This danger is directly proportional to the height of the water, the duration of the flood stage, and the intensity of either the current or wave action. The danger is inversely proportional to the cross-sectional area of the levee, the levee's height, and the degree of maintenance. A well constructed levee of proper section should, if maintained and not overtopped, hold through any major flood. However, serious damages and loss of life may result from a break. Foundation troubles result in sand boils or a sinking levee, and the local use of unsatisfactory materials causes slides and sloughs. However, such threatened failures can be met if prompt action is taken and proper methods of treatment are used. Wave wash is to be expected whenever the levee is exposed to a wide stretch of open water and is serious if permitted to continue over a considerable length of time.

5-05. **Sand Boils.** These danger spots are serious if discharging material. The common method of controlling sand boils consists of walling up a watertight sack ring around the boil up to a height necessary to reduce the velocity of flow to a point at which material is no longer discharging from the boil (see EXHIBIT J, Plate 1). The sack ring around the boil should be large enough to protect the defective area immediately surrounding the boil. If several boils of sufficient force to displace material are observed, a sack sub-levee may be built around the entire nest of boils, rising to such a height that none of the boils will discharge with enough force to displace any material.

5-06. **Wave Wash.** The Superintendent for local interests and Work Supervisor should study the levee beforehand to determine the possibility of wave wash. All such reaches should be located well in advance and for use in emergency, a reserve supply of filled sacks and rolls of polyethylene sheeting canvas should be kept on board flats. If the slope is well sodded, a storm of an hour's duration should cause very little damage. During periods of high wind and high water, experienced personnel should observe where the washouts are beginning by sounding or by prodding along the submerged slope with a rod. Sections of canvas or polyethylene sheeting should be placed over the washed areas, as shown on EXHIBIT J, Plate 2. As an alternative, filled sacks should be placed in the cut in an effective manner and as soon as possible. The filled sacks should be laid in sections of sufficient length to give protection well above the anticipated rise. Bagging so laid must be thoroughly weighted down to be effective. EXHIBIT J, Plate 3 shows a movable type of wave wash protection, also used with good results. Its advantage is that it can be rapidly built at any convenient place and easily set in place on the job.

5-07. **Scour.** A careful observation should be made of the waterside of the levee at all localities where a current of more than two feet per second is observed, or where profiles show a high water gradient of two feet per mile or greater. Scours may be found near the ends of old levee dikes, road crossing ramps and places where pipes, sewers or other structures penetrate the levee. All scours should be carefully observed to determine the necessity and adequacy of repairs to be accomplished. An approved method to control scour is to construct deflection dikes using brush, lumber, filled sacks, stones, or combinations of such and securing with wire and stakes. (See EXHIBIT J, Plate 4.)

5-08. Topping. The levee is to be continuously maintained at project design grade. If any reaches are determined to be below design grade, emergency topping should be undertaken at once to provide design grade, as follows:

A. Sandbag Topping. Material filled sacks may be used to raise the crown of the levee about three feet. The sacks should be laid stretcher-wise or along the levee for the first layer, crosswise for the second layer, and so on. Sacks should be lapped at least 1/3 either way and well fitted into place. When properly sacked and tamped, one sack will give about three to four inches of topping. If gravel is available, it should be used for front facing to avoid washing out. (See EXHIBIT J, Plate 5.)

B. Lumber and Sandbag Topping. This is the most commonly used method for raising low reaches in emergencies. In putting on this topping, as well as other toppings, a careful line of levels should be run and grade stakes set in advance. 2'' x 4'' x 6' stakes should then be driven on the waterside of the crown six feet apart, and 1" x 12'' boards nailed to landside of the stakes. This wall, backed with a single tier of sacks, will hold out at least one foot of water. If a second foot is necessary, the layers of sacks will have to be increased in number and reinforced. The stakes should be driven 3 feet in the ground, and should project out 3 feet, thus providing, in extreme cases, a 3-foot topping if properly braced behind with sacks and earth. In some instances, it may be practicable to back up the planking with tamped earth obtained in the vicinity in lieu of the sacks, as shown on EXHIBIT J, Plate 6.

C. Mud Box Levee. Mud boxes consist of two parallel wooden walls placed near the waterside of the levee crown or a berm and filled with available material. When constructed on a wide levee crown, it may permit a portion of that crown to remain as a limited roadway. Use mud boxes when fill material has a soupy consistency; the inner face of the wall should first be lined with canvas or polyethylene sheeting. (See EXHIBIT J, Plate 7.) Boxes with smaller dimensions than illustrated may be constructed when necessitated by limited right-of-way or materials; however, the box measurements should be determined by the same ratio as that of a box 24" high by 30" wide.

5-09. Transportation. In instances where it is necessary to send equipment over roads that are impassable due to mud or sand, their passage may be provided by the use of a plank road or by means of steel or wire mats. Telephone or radio communication should be provided along dangerous stretches of the levee when travel or other satisfactory means of communications cannot be maintained.

5-10. Disaster Relief. It is the responsibility of local, state and municipal authorities supported by and/or working in connection with the American Red Cross to adopt measures for the relief of flood disaster victims. Relief measures can be undertaken by the Department of the Army through its Army Area Commander under existing Army Regulations, but such measures will be undertaken only as a last resort in extreme cases and under compelling circumstances where local resources are clearly inadequate to cope with the situation.

5-11. Technical Assistance. During a flood alert, the Corps of Engineers has three major tasks: first, to give local authorities the benefit of the Corps' flood fighting experience; second, to answer requests for assistance in flood fighting received through the Department of Water Resources; and third, in cooperation with the Department, to assist local agencies in planning maintenance of flood control works and preparation for flood emergencies. The authority granted under Code 910-200 of ER 500-1-1, "Emergency Operations", applies to emergency flood fighting. This authority allows divisions/districts to furnish required assistance in support of other agencies and by supplementing local resources as appropriate. Corps assistance may include the following:

A. Furnishing technical advice and assistance;

B. Furnishing flood fighting materials;

C. Hiring of equipment and operators for flood fighting operations;

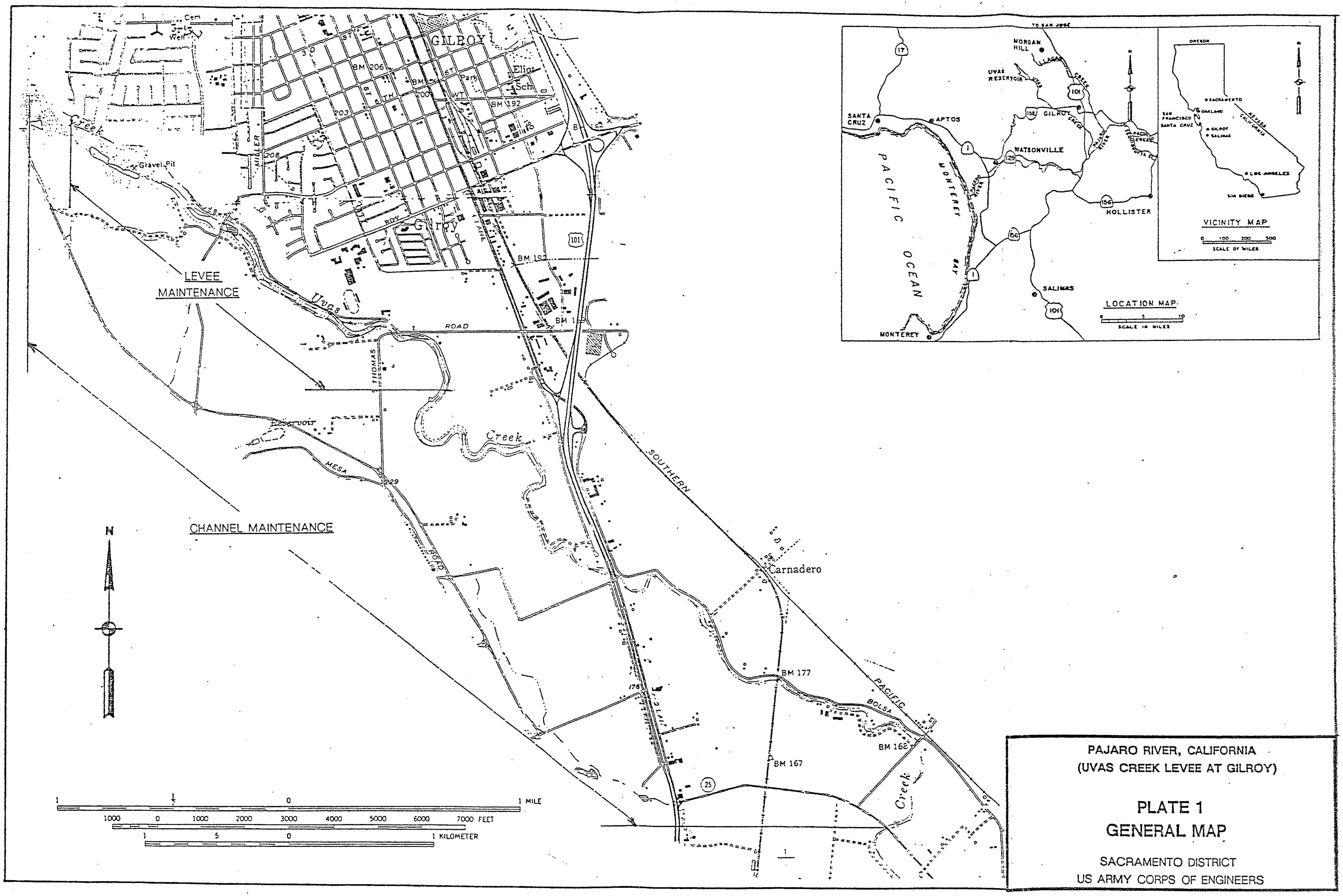
D. Removal of log or debris jams that are blocking stream flow and causing flooding of communities.

During the emergency situation, Code 910-200 funding will be used when materials are purchased for issue. These funds will also be used to replace items issued from disaster preparedness and other stocks when local interests are not able to provide replacements. All unused stocks on loan will be returned to the Corps when the operation is complete. Consumed supplies will be replaced in kind or paid for by local interests to the extent considered feasible and practicable by the Division or District Commander.

5-12. **Government Equipment.** The District Engineer is authorized to use or loan Government property and plant in cases of extreme emergency where life is in danger and there is no opportunity to secure prior authority for such use. The authority also extends to saving of property where no suitable private equipment is available, provided such use is without detriment to the Government.

5-13. **Premeditated Damages.** In the event of an extraordinary flood requiring a flood fight over long stretches of levee on both sides of the channel there is a possibility that threatened landowners may be tempted to relieve the strain by premeditated breaching of the opposite levee. Local interests should continually guard against such premeditated damage to the levees. Personnel of the Corps of Engineers, U.S. Army, whether military or civilian, are not vested with any civil police authority in performance of their engineering duties and they will not attempt to exercise any such authority. The responsibility for protecting flood control works against sabotage, acts of depredation, or other unlawful acts rests with the local interests through local and State Governmental agencies. In the event that local law enforcement agencies prove inadequate, local interests, as provided by law, can request the aid of state forces and the aid of Federal Troops if additional support becomes necessary.

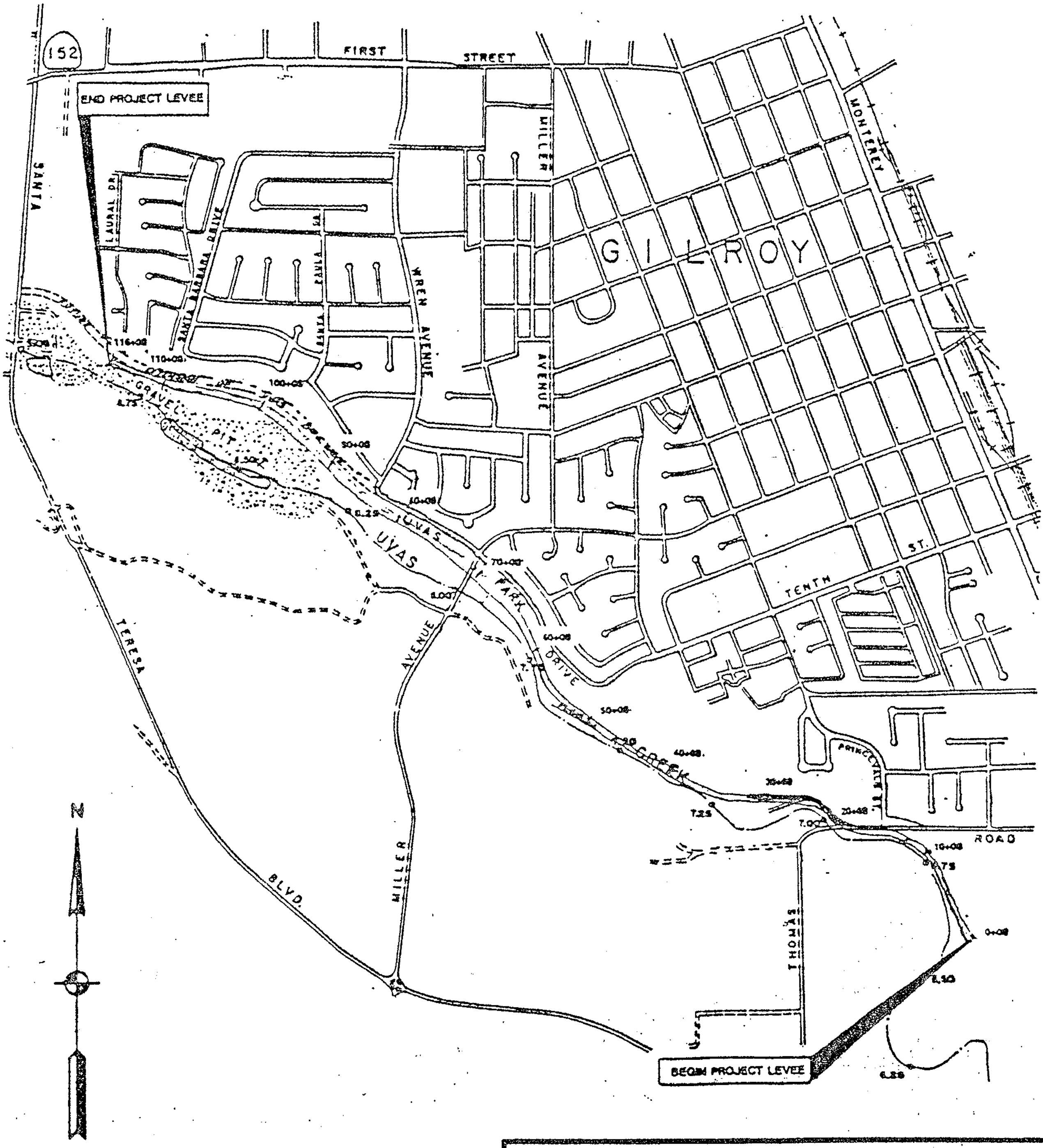
EXHIBITS



PAJARO RIVER, CALIFORNIA
(UVAS CREEK LEVEE AT GILROY)

PLATE 1
GENERAL MAP

SACRAMENTO DISTRICT
US ARMY CORPS OF ENGINEERS



LEGEND

• 6.00	RIVER MILE
30+00	LEVEE STATION

GRAPHIC SCALE

0 500' 1000' 2000' 3000'

PAJARO RIVER, CALIFORNIA
(UVAS CREEK LEVEE AT GILROY)

PLATE 2
PROJECT LEVEE LOCATION

SACRAMENTO DISTRICT
US ARMY CORPS OF ENGINEERS

EXHIBIT B

FEDERAL FLOOD CONTROL REGULATIONS

CODE OF FEDERAL REGULATIONS (EXTRACT)

TITLE 33—NAVIGATION AND NAVIGABLE WATERS

Chapter II — Corps of Engineers, Department of the Army

PART 208 – FLOOD CONTROL REGULATIONS

AUTHORITY: § 208.10 issued under Sec. 7, 58 Stat. 890; 33 U.S.C. 709.

§ 208.10 *Local flood protection works; maintenance and operation of structures and facilities* — (a) *General.* (1) The structures and facilities constructed by the United States for local flood protection shall be continuously maintained in such a manner and operated at such times and for such periods as may be necessary to obtain the maximum benefits.

(2) The State, political subdivision thereof, or other responsible local agency, which furnished assurance that it will maintain and operate flood control works in accordance with regulations prescribed by the Secretary of the Army, as required by law, shall appoint a permanent committee consisting of or headed by an official hereinafter called the "Superintendent," who shall be responsible for the development and maintenance of, and directly in charge of, an organization responsible for the efficient operation and maintenance of all of the structures and facilities during flood periods and for continuous inspection and maintenance of the project works during periods of low water, all without cost to the United States.

(3) A reserve supply of materials needed during a flood emergency shall be kept on hand at all times.

(4) No encroachment or trespass which will adversely affect the efficient operation or maintenance of the project works shall be permitted upon the rights-of-way for the protective facilities.

(5) No improvement shall be passed over, under, or through the walls, levees, improved channels or floodways, nor shall any excavation or construction be permitted within the limits of the project right-of-way, nor shall any change be made in any feature of the works without prior determination by the District Engineer of the Department of the Army or his authorized representative that such improvement, excavation, construction, or alteration will not adversely affect the functioning of the protective facilities. Such improvements or alterations as may be found to be desirable and permissible under the above determination shall be constructed in accordance with standard engineering practice. Advice regarding the effect of proposed improvements or alterations on the functioning of the project and information concerning methods of construction acceptable under standard engineering practice shall be obtained from the District Engineer or, if otherwise obtained, shall be submitted for his approval. Drawings or prints showing such improvements or alterations as finally constructed shall be furnished the District Engineer after completion of the work.

(6) It shall be the duty of the Superintendent to submit a semiannual report to the District Engineer covering inspection, maintenance, and operation of the protective works.

(7) The District Engineer or his authorized representatives shall have access at all times to all portions of the protective works.

(8) Maintenance measures or repairs which the District Engineer deems necessary shall be promptly taken or made.

(9) Appropriate measures shall be taken by local authorities to insure that the activities of all local organizations operating public or private facilities connected with the protective works are coordinated with those of the Superintendent's organization during flood periods.

(10) The Department of the Army will furnish local interests with an Operation and Maintenance Manual for each completed project, or separate useful part thereof, to assist them in carrying out their obligations under this part.

(b) *Levees* — (1) *Maintenance.* The Superintendent shall provide at all times such maintenance as may be required to insure serviceability of the structures in time of flood. Measures shall be taken to promote the growth of sod, exterminate burrowing animals, and to provide for routine mowing of the grass and weeds, removal of wild growth and drift deposits, and repair of damage caused by erosion or other forces. Where practicable, measures shall be taken to retard bank erosion by planting of willows or other suitable growth on areas riverward of the levees. Periodic inspections shall be made by the Superintendent to insure that the above maintenance measures are being effectively carried out and, further, to be certain that:

(i) No unusual settlement, sloughing, or material loss of grade or levee cross section has taken place;

(ii) No caving has occurred on either the land side or the river side of the levee which might affect the stability of the levee section;

(iii) No seepage, saturated areas, or sand boils are occurring;

(iv) Toe drainage systems and pressure relief wells are in good working condition, and that such facilities are not becoming clogged;

(v) Drains through the levees and gates on said drains are in good working condition;

(vi) No revetment work or riprap has been displaced, washed out, or removed;

(vii) No action is being taken, such as burning grass and weeds during inappropriate seasons, which will retard or destroy the growth of sod;

(viii) Access roads to and on the levee are being properly maintained;

(ix) Cattle guards and gates are in good condition;

(x) Crown of levee is shaped so as to drain readily, and roadway thereon, if any, is well shaped and maintained;

(xi) There is no unauthorized grazing or vehicular traffic on the levees;

(xii) Encroachments are not being made on the levee right-of-way which might endanger the structure or hinder its proper and efficient functioning during times of emergency.

Such inspections shall be made immediately prior to the beginning of the flood season; immediately following each major high water period, and otherwise at intervals not exceeding 90 days; and such intermediate times as may be necessary to insure the best possible care of the levee. Immediate steps will be taken to correct dangerous conditions disclosed by such inspections. Regular maintenance repair measures shall be accomplished during the appropriate season as scheduled by the Superintendent.

(2) *Operation.* During flood periods the levee shall be patrolled continuously to locate possible sand boils or unusual wetness of the landward slope and to be certain that:

(i) There are no indications of slides or sloughs developing;

(ii) Wave wash or scouring action is not occurring;

(iii) No low reaches of levee exist which may be overtopped;

(iv) No other conditions exist which might endanger the structure.

Appropriate advance measures will be taken to insure the availability of adequate labor and materials to meet all contingencies. Immediate steps will be taken to control any condition which endangers the levee and to repair the damaged section.

(c) *Flood walls.* — (1) *Maintenance.* Periodic inspections shall be made by the Superintendent to be certain that:

(i) No seepage, saturated areas, or sand boils are occurring;

(ii) No undue settlement has occurred which affects the stability of the wall or its water tightness;

(iii) No trees exist, the roots of which might extend under the wall and offer accelerated seepage paths;

(iv) The concrete has not undergone cracking, chipping, or breaking to an extend which might affect the stability of the wall or its water tightness;

(v) There are no encroachments upon the right-of-way which might endanger the structure or hinder its functioning in time of flood;

(vi) Care is being exercised to prevent accumulation of trash and debris adjacent to walls, and to insure that no fires are being built near them;

(vii) No bank caving conditions exist riverward of the wall which might endanger its stability;

(viii) Toe drainage systems and pressure relief wells are in good working condition, and that such facilities are not becoming clogged.

Such inspections shall be made immediately prior to the beginning of the flood season, immediately following each major high water period, and otherwise at intervals not exceeding 90 days. Measures to eliminate encroachments and effect repairs found necessary by such inspections shall be undertaken immediately. All repairs shall be accomplished by methods acceptable in standard engineering practice.

(2) *Operation.* Continuous patrol of the wall shall be maintained during flood periods to locate possible leakage at monolith joints or seepage underneath the wall. Floating plant or boats will not be allowed to lie against or tie up to the wall. Should it become necessary during a flood emergency to pass anchor cables over the wall, adequate measures shall be taken to protect the concrete and construction joints. Immediate steps shall be taken to correct any condition which endangers the stability of the wall.

(d) *Drainage structures*—(1) *Maintenance.* Adequate measures shall be taken to insure that inlet and outlet channels are kept open and that trash, drift, or debris is not allowed to accumulate near drainage structures. Flap gates and manually operated gates and valves on drainage structures shall be examined, oiled, and trial operated at least once

EXHIBIT B

Sheet 1 of 2

CODE OF FEDERAL REGULATIONS (EXTRACT)

every 90 days. Where drainage structures are provided with stop log or other emergency closures, the condition of the equipment and its housing shall be inspected regularly and a trial installation of the emergency closure shall be made at least once each year. Periodic inspections shall be made by the Superintendent to be certain that:

(i) Pipes, gates, operating mechanism, riprap, and headwalls are in good condition;

(ii) Inlet and outlet channels are open;

(iii) Care is being exercised to prevent the accumulation of trash and debris near the structures and that no fires are being built near bituminous coated pipes;

(iv) Erosion is not occurring adjacent to the structure which might endanger its water tightness or stability.

Immediate steps will be taken to repair damage, replace missing or broken parts, or remedy adverse conditions disclosed by such inspections.

(2) *Operation.* Whenever high water conditions impend, all gates will be inspected a short time before water reaches the invert of the pipe and any object which might prevent closure of the gate shall be removed. Automatic gates shall be closely observed until it has been ascertained that they are securely closed. Manually operated gates and valves shall be closed as necessary to prevent inflow of flood water. All drainage structures in levees shall be inspected frequently during floods to ascertain whether seepage is taking place along the lines of their contact with the embankment. Immediate steps shall be taken to correct any adverse condition.

(e) *Closure structures*—(1) *Maintenance.* Closure structures for traffic openings shall be inspected by the Superintendent every 90 days to be certain that:

(i) No parts are missing;

(ii) Metal parts are adequately covered with paint;

(iii) All movable parts are in satisfactory working order;

(iv) Proper closure can be made promptly when necessary;

(v) Sufficient materials are on hand for the erection of sand bag closures and that the location of such materials will be readily accessible in times of emergency.

Tools and parts shall not be removed for other use. Trial erections of one or more closure structures shall be made once each year, alternating the structures chosen so that each gate will be erected at least once in each 3-year period. Trial erection of all closure structures shall be made whenever a change is made in key operating personnel. Where railroad operation makes trial erection of a closure structure infeasible, rigorous inspection and drill of operating personnel may be substituted therefor. Trial erection of sand bag closures is not required. Closure materials will be carefully checked prior to and following flood periods, and damaged or missing parts shall be repaired or replaced immediately.

(2) *Operation.* Erection of each movable closure shall be started in sufficient time to permit completion before flood waters reach the top of the structure sill. Information regarding the proper method of erecting each individual closure structure, together with an estimate of the time required by an experienced crew to complete its erection will be given in the Operation and Maintenance Manual which will be furnished local interests upon completion of the project. Closure structures will be inspected frequently during flood periods to ascertain that no undue leakage is occurring and that drains provided to care for ordinary leakage are functioning properly. Boats or floating plant shall not be allowed to tie up to closure structures or to discharge passengers or cargo over them.

(f) *Pumping plants*—(1) *Maintenance.* Pumping plants shall be inspected by the Superintendent at intervals not to exceed 30 days during flood seasons and 90 days during off-flood seasons to insure that all equipment is in order for instant use. At regular intervals, proper measures shall be taken to provide for cleaning plant, buildings, and equipment, repainting as necessary, and lubricating all machinery. Adequate supplies of lubricants for all types of machines, fuel for gasoline or diesel powered equipment, and flash lights or lanterns for emergency lighting shall be kept on hand at all times. Telephone service shall be maintained at pumping plants. All equipment, including switch gear, transformers, motors, pumps, valves, and gates shall be trial operated and checked at least once every 90 days. Megger tests of all insulation shall be made whenever wiring has been subjected to undue dampness and otherwise at intervals not to exceed one year. A record shall be kept showing the results of such tests. Wiring disclosed to be in an unsatisfactory condition by such tests shall be brought to a satisfactory condition or shall be promptly replaced. Diesel and gasoline engines shall be started at such intervals and allowed to run for such length of time as may be necessary to insure their serviceability in times of emergency. Only skilled electricians and mechanics shall be employed on tests and repairs. Operating personnel for the plant shall be present during tests. Any equipment removed from the station for repair or replacement shall be returned or replaced as soon as practicable and shall be trial operated after reinstallation. Repairs requiring removal of equipment from the plant shall be made during off-flood seasons insofar as practicable.

(2) *Operation.* Competent operators shall be on duty at pumping plants whenever it appears that necessity for pump operation is imminent. The operator shall thoroughly inspect, trial operate, and place in readiness all plant equipment. The operator shall be familiar with the equipment manufacturers' instructions and drawings and with the "Operating Instructions" for each station. The equipment shall be operated in accordance with the above-mentioned "Operating Instructions" and care shall be exercised that proper lubrication is being supplied all equipment, and that no overheating, undue vibration or noise is occurring. Immediately upon final recession of flood waters, the pumping station shall be thoroughly cleaned, pump house sumps flushed, and equipment thoroughly inspected, oiled and greased. A record or log of pumping plant operation shall be kept for each station, a copy of which shall be furnished the District Engineer following each flood.

(g) *Channels and floodways* — (1) *Maintenance.* Periodic inspections of improved channels and floodways shall be made by the Superintendent to be certain that:

(i) The channel or floodway is clear of debris, weeds, and wild growth;

(ii) The channel or floodway is not being restricted by the depositing of waste materials, building of unauthorized structures or other encroachments;

(iii) The capacity of the channel or floodway is not being reduced by the formation of shoals;

(iv) Banks are not being damaged by rain or wave wash, and that no sloughing of banks has occurred;

(v) Riprap sections and deflection dikes and walls are in good condition;

(vi) Approach and egress channels adjacent to the improved channel or floodway are sufficiently clear of obstructions and debris to permit proper functioning of the project works.

Such inspections shall be made prior to the beginning of the flood season and otherwise at intervals not to exceed 90 days. Immediate steps will be taken to remedy any adverse conditions disclosed by such inspections. Measures will be taken by the Superintendent to promote the growth of grass on bank slopes and earth deflection dikes. The Superintendent shall provide for periodic repair and cleaning of debris basins, check dams, and related structures as may be necessary.

(2) *Operation.* Both banks of the channel shall be patrolled during periods of high water, and measures shall be taken to protect those reaches being attacked by the current or by wave wash. Appropriate measures shall be taken to prevent the formation of jams of ice or debris. Large objects which become lodged against the bank shall be removed. The improved channel or floodway shall be thoroughly inspected immediately following each major high water period. As soon as practicable thereafter, all snags and other debris shall be removed and all damage to banks, riprap, deflection dikes and walls, drainage outlets, or other flood control structures repaired.

(h) *Miscellaneous facilities*—(1) *Maintenance.* Miscellaneous structures and facilities constructed as a part of the protective works and other structures and facilities which function as a part of, or affect the efficient functioning of the protective works, shall be periodically inspected by the Superintendent and appropriate maintenance measures taken. Damaged or unserviceable parts shall be repaired or replaced without delay. Areas used for ponding in connection with pumping plants or for temporary storage of interior run-off during flood periods shall not be allowed to become filled with silt, debris, or dumped material. The Superintendent shall take proper steps to prevent restriction of bridge openings and, where practicable, shall provide for temporary raising during floods of bridges which restrict channel capacities during high flows.

(2) *Operation.* Miscellaneous facilities shall be operated to prevent or reduce flooding during periods of high water. Those facilities constructed as a part of the protective works shall not be used for purposes other than flood protection without approval of the District Engineer unless designed therefor. (Sec. 3, 49 Stat. 1571, as amended; 33 U.S.C. 701C) [9 F.R. 9999, Aug. 17, 1944; 9 F.R. 10203, Aug. 22, 1944]

EXHIBIT B

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EXHIBIT C

LOCAL COOPERATION AGREEMENT
(FLOOD CONTROL)

AGREEMENT BETWEEN
THE DEPARTMENT OF THE ARMY
AND
THE SANTA CLARA VALLEY WATER DISTRICT
FOR LOCAL COOPERATION AT
PAJARO RIVER, CALIFORNIA

THIS AGREEMENT, entered into this 25th day of June 1987, by and between the DEPARTMENT OF THE ARMY (hereinafter referred to as the "Government"), acting by and through the Acting Assistant Secretary of the Army (Civil Works), and the SANTA CLARA VALLEY WATER DISTRICT (hereinafter referred to as the "District"),

WITNESSETH THAT:

WHEREAS, construction of the Pajaro River, California project (hereinafter called the "Project") was authorized by the Flood Control Act of 1944 (public Law 78-534); and

WHEREAS, the Water Resources Development Act of 1986, Public Law 99-662, specifies the cost-sharing requirements applicable to the Project; and

WHEREAS, the Project, described in "Pajaro River, California, Uvas Creek Levee at Gilroy, General Design Memorandum, November 1984," approved 17 June 1985, provides for a levee which will provide flood protection along the left side of Uvas Creek in Gilroy, California; and

WHEREAS, the District has the authority and capability to furnish the cooperation hereinafter set forth and is willing to participate in project cost-sharing and financing in accordance with the terms of this Agreement.

NOW THEREFORE, the parties agree as follows:

ARTICLE I - DEFINITIONS

a. The term "Project" shall mean construction of a 2-mile long levee along the north side of Uvas Creek from a point about 2,000 feet south of Thomas Road to about 3,500 feet upstream of Miller Avenue, and shall exclude the recreation features to be constructed under a separate agreement between the Government and the City of Gilroy.

b. The term "total project costs" shall mean all costs incurred by the District and the Government directly related to construction of the project. Such costs shall include, but not necessarily be limited to, actual construction costs, costs of applicable engineering and design, continuing planning and engineering costs incurred after October 1, 1985, supervision and administration costs, costs of project construction contract dispute settlements or awards, and the value of lands, easements, rights-of-way, relocations, and dredged material disposal areas provided for the project by the District, but shall not include any costs for betterments or operation and maintenance.

c. The term "Contracting Officer" shall mean Commander of the U.S. Army Engineer District, Sacramento, or his designee.

d. The term "period of construction" shall mean the time from advertisement of the first construction contract to the time of acceptance of the project by the Contracting Officer.

e. The term "highway" shall mean any highway, thoroughfare, roadway, street, or other public or private road or way.

ARTICLE II - OBLIGATIONS OF PARTIES

a. The District shall provide, during the period of construction, all lands, easements, rights-of-way, and dredged material disposal areas, and perform all utility and facility alterations and relocations determined by the Government to be required for construction of the Project regardless of their value.

b. The District shall make a cash payment of not less than 5 percent of total Project costs during the period of construction, regardless of the value of the items in paragraph a. of this article.

c. If the value of the items in paragraph a. of this article, as determined pursuant to Article IV of this Agreement, is less than 20 percent of total Project costs, then the District shall, during the period of construction, make such additional cash payments as are necessary to bring its total contribution in cash and value of lands, easements, rights-of-way, and utility and facility alterations and relocations, to an amount equal to 25 percent of total Project costs.

d. If the value of the items in paragraph a. of this article , as determined pursuant to Article IV of this Agreement, is greater than 45 percent of total Project costs, then the District shall be reimbursed by the Government, subject to the availability of appropriations, such cash amount as is necessary to bring its total contribution in cash and value of lands, easements, rights-of-way, and utility and facility alterations and relocations to an amount equal to 50 percent of total Project costs.

e. The Government, subject to and using funds provided by the District and appropriated by the Congress, shall expeditiously construct the Project, applying those procedures usually followed or applied in Federal projects, pursuant to Federal laws, regulations, and policies. Award of Federal contracts and the work thereunder shall be exclusively within the control of the Government.

f. Upon completion of Project construction, the Government shall turn the Project over to the District, which shall be solely responsible for operating, maintaining, repairing, replacing and rehabilitating the Project in accordance with Article VIII of this Agreement.

g. The District shall, to the extent of its powers, prescribe and enforce regulations to prevent obstruction of or encroachment on the Project that would reduce the level of protection it affords or that would hinder operation and maintenance.

h. Required assurances for recreation development at the Project will be the subject of a separate contract. If local cooperation in the recreation features is not forthcoming, the Project may be constructed for flood control only.

ARTICLE III - LANDS, FACILITIES, AND RELOCATION ASSISTANCE

a. Prior to the advertisement of any construction contract, the District shall furnish to the Government all lands, easements, and rights-of-way, including suitable borrow and dredged material disposal areas, as may be determined by the Government to be necessary for construction of the project, and shall furnish to the Government evidence supporting the District's legal authority to grant rights-of-entry to such lands.

b. The District shall provide or pay to the Government the full cost of providing all retaining dikes, wasteweirs, bulkheads, and embankments, including all monitoring features and stilling basins, determined by the Government to be necessary for construction of the project.

c. Upon notification from the Government, the District shall accomplish or arrange for accomplishment at no cost to the Government of all alterations and relocations of buildings, highways, railroads, bridges, storm drains, utilities, cemeteries, and other facilities, structures, and improvements determined by the Government to be necessary for construction of the project.

d. The District shall comply with the applicable provisions of the Uniform Relocations Assistance and Real Property Acquisition Policies Act of 1970, Public Law 91-646, approved January 2, 1971, in acquiring lands, easements, and rights-of-way for construction and subsequent operation and maintenance of the project, and inform all affected persons of applicable benefits, policies, and procedures in connection with said Act.

ARTICLE IV - VALUE OF LANDS AND FACILITIES

a. The value of the lands, easements and rights-of-way to be included in total Project costs and credited toward the District's share of total Project costs will be determined in accordance with the following procedures:

1) If the lands, easements, and rights-of-way are owned by the District as of the date this Agreement is signed, the credit shall be the fair market value of the interests at the time such interests are made available to the Government for construction of the Project. The fair market value shall be determined by an appraisal, to be obtained by the District, which has been prepared by an independent and qualified appraiser who is acceptable to both the District and the Government. The appraisal shall be reviewed and approved by the Government.

2) If the lands, easements and rights-of-way are to be acquired by the District after the date this Agreement is signed, the credit shall be the fair market value of the interests at the time such interests are made available to the Government for construction of the Project. The fair market value shall be determined as specified in subparagraph 1. above. If the District pays an amount in excess of the appraised fair market value, it may

be entitled to a credit for this excess amount if the District has secured prior written approval from the Government of its offer to purchase such interests.

3) If the District acquires more lands, easements or rights-of-way than are necessary for Project purposes, as determined by the Government, then only the value of such portions of those acquisitions as are necessary for Project purposes shall be included in total Project costs and credited to the District's share.

4) Credit for lands, easements and rights-of-way in the case of involuntary acquisitions which occur within a one year period preceding the date this Agreement is signed or which occur after the date this Agreement is signed will be based on court awards, or on stipulated settlements that have received prior Government approval.

5) For lands, easements or rights-of-way acquired by the District within a five year period preceding the date this Agreement is signed, or any time after this Agreement is signed, credits provided under this paragraph will also include the actual incidental costs of acquiring the interest, e.g., closing and title costs, appraisal costs, survey costs, attorney's fees, plat maps, and mapping costs, as well as the actual amounts expended for any relocation assistance made in accordance with conditions under this Agreement.

b. The costs of construction, relocation, alteration or modification of utilities or facilities which will be included in total Project costs and credited towards the District's share of total Project costs, shall be that portion of the actual costs incurred by the District as set forth below:

1) Highways and Highway Bridges: Only that portion of the cost as would be necessary to construct substitute bridges and highways to the design standard that the State of California would use in constructing a new bridge or road under similar conditions of geography and traffic loads.

2) Utilities and Facilities: Actual relocation costs, less depreciation, less salvage value, plus the cost of removal, less the cost of betterments. With respect to betterments, new materials shall not be used in any relocation or alteration if materials of value and usability equal to those in the existing facility are available or can be obtained as salvage

from the existing facility or otherwise, unless the provision of new material is more economical. If despite the availability of used material, new material is used, where the use of such new material represents an additional cost, such cost shall not be included in total Project costs.

ARTICLE V - CONSTRUCTION PHASING AND MANAGEMENT

a. To provide for consistent and effective communication between the District and the Government during the term of construction, the District and the Government shall appoint representatives to coordinate on scheduling, plans, specifications, modifications, contract costs, and other matters relating to construction of the Project.

b. The representatives appointed above shall meet as necessary and shall make such recommendations as they deem warranted to the Contracting Officer.

c. The Contracting Officer shall consider the recommendations of the representatives in all matters relating to the Project, but the Contracting Officer, having ultimate responsibility for construction of the Project, has complete discretion to accept, reject, or modify the recommendations of the representatives.

ARTICLE VI - METHOD OF PAYMENT

a. The local sponsor shall provide, over the term of construction, the amounts required under Article II of this Agreement. Total project costs are presently estimated to be $10,630,000. In order to meet its share, the local sponsor must provide a total cash contribution presently estimated to be $530,000.

b. The District shall provide its required cash contribution in accordance with the following procedures:

1) Six months before the start of each fiscal year of the District, the Government shall credit the District's share with the value of lands, easements, rights-of-way, and relocations and alterations provided or to be provided by the District during the corresponding Government fiscal year, and the Government shall notify the District of the estimated funds that will be required from the District to meet its share of total Project costs for that Government fiscal year. The District shall then make those funds available to the Government as expeditiously as possible through either cash payments or

deposit of cash in an escrow account acceptable to the Government, or by irrevocable letter of credit drawn upon a bank acceptable to the Government. The estimate of total Project costs for the first Government fiscal year of construction will include all costs incurred by the Government prior to the date of this Agreement.

2) Sixty days prior to the advertisement of each construction contract, the Government shall notify the District of its required share of contract costs, plus supervisory and administrative expenses. Within 30 calendar days thereafter, the District shall verify to the satisfaction of the Government that sufficient funds are available to the Government in the funding institution or mechanism referred to in paragraph b.(1) of this article to meet its share of the contract costs. If the Government determines that sufficient sums are not available to it, it shall so notify the District and the District shall deposit said sums within 10 calendar days and provide verification of such deposit. If the contract is expected to extend into more than one Government fiscal year, the District may make the deposit in installments, with each installment to be made prior to each Government fiscal year in the amount required for that year's work on the contract, plus supervisory and administrative costs.

3) When bids are opened on any given contract and additional funds are needed from the District to meet its required share of contract costs, the Government shall so notify the District and the District shall deposit the additional funds within 10 calendar days after demand is made by the Government.

c. The Government will draw on the funds, escrow account, or letter of credit provided by the District such sums as it deems necessary to cover contractual and in-house fiscal obligations as they are incurred, as well as project costs incurred by the Government prior to the initiation of construction.

d. Upon completion of the Project and resolution of all relevant contract claims and appeals, the Government will compute the total Project costs and tender to the District a final accounting of its share of Project costs.

1) In the event the total contribution in cash and value of lands, easements, rights-of-way, and utility and facility relocations made by the District is less than its required share of total Project costs at the time of the final accounting, the District shall within 90 calendar days after receipt of written notice make a cash payment to the Government of whatever sum is required to meet its required share of Project costs.

2) In the event the District has made excess cash contributions which result in the District's having provided more than its required share of total Project costs, the Government shall return to the District, within 90 calendar days of the final accounting, subject to the availability of funds, such cash contributions to the extent they exceed 5 percent of total Project costs.

3) In the event the total contribution in cash and value of lands, easements, rights-of-way,and utility and facility relocations made by the District is greater than 50 percent of the total Project costs, then the Government shall, subject to the availability of appropriations, reimburse the District, within 90 calendar days of the final accounting, whatever sum is required to bring the District's total contribution to an amount equal to 50 percent of total Project costs.

ARTICLE VII - DISPUTES

Before any party to this Agreement may bring suit in any court concerning an issue relating to this Agreement, such party must first seek in good faith to resolve the issue through negotiation or through other forms of nonbinding alternative dispute resolution mutually acceptable to the parties.

ARTICLE VIII - OPERATION, MAINTENANCE AND REHABILITATION

a. The District shall operate, maintain, replace, and rehabilitate the Project upon completion in accordance with regulations or directions prescribed by the Government.

b. The District hereby gives the Government a right to enter, at reasonable times and in a reasonable manner, upon lands which it owns or controls for access to the Project for the purpose of inspection, and, if necessary, for the purpose of completing, operating, repairing, replacing, maintaining, and rehabilitating the Project. If an inspection shows that the district for any reason is failing to complete, operate, repair, replace, maintain, and rehabilitate the Project in accordance with the assurances hereunder, the Government will send a written notice to the District. If the District persists in such failure for 30 calendar days after receipt of the notice then the Government shall have a right to enter, at reasonable times and in a reasonable manner, upon lands the District owns or controls for access to the Project for the purpose of completing, operating, repairing, replacing, maintaining, or rehabilitating the Project. No completion, operation, repair, replacement, maintenance, or rehabilitation by the Government shall operate to relieve the District of responsibility to meet its obligations as set forth in this Agreement, or to preclude the Government from pursuing any other remedy at law or equity to assure faithful performance pursuant to this Agreement.

ARTICLE IX - RELEASE OF CLAIMS

The District shall hold and save the Government free from all damages arising from the construction, operation and maintenance of the Project, except for damages due to the fault or negligence of the Government or its contractors.

ARTICLE X - MAINTENANCE OF RECORDS

The Government and the District shall keep books, records, documents, and other evidence pertaining to costs and expenses incurred pursuant to this Agreement to the extent and in such detail as will properly reflect total Project costs. The Government and the District shall maintain such books, records, documents, and other evidence for a minimum of three years after completion of construction of the Project and resolution of all claims resulting therefrom, and shall make available at their offices at reasonable times, such books, records, documents, and other evidence for inspection and audit by authorized representatives of the parties to this Agreement.

ARTICLE XI - FEDERAL AND STATE LAWS

In acting under its rights and obligations hereunder, the District agrees to comply with all applicable Federal and State laws and regulations, including section 601 of Title VI of the Civil Rights Act of 1964 (Public Law 88-352) and Department of Defense Directive 5500.II issued pursuant thereto and published in Part 300 of Title 32, Code of Federal Regulations as well as

Army Regulation 600-7, entitled "Nondiscrimination on the Basis of Handicap in Programs and Activities Assisted or Conducted by the Department of the Army."

ARTICLE XII - RELATIONSHIP OF PARTIES

The parties to this Agreement act in an independent capacity in the performance of their respective functions under this Agreement, and neither party is to be considered the officer, agent, or employee of the other.

ARTICLE XIII - OFFICIALS NOT TO BENEFIT

No member of or delegate to the Congress, or resident commissioner, shall be admitted to any share or part of this Agreement, or to any benefit that may arise therefrom.

ARTICLE XIV - TERMINATION OR SUSPENSION

a. If at any time the District fails to make the payments required under this Agreement, the Secretary of the Army shall terminate or suspend work on the Project until the District is no longer in arrears, unless the Secretary determines that continuation of work on the Project is in the interest of the United States. Any delinquent payment shall be charged interest at a rate, to be determined by the Secretary of the Treasury, equal to 150 per centum of the average bond equivalent rate of the 13-week Treasury bills auctioned immediately prior to the date on which such payment became delinquent, or auctioned immediately prior to the beginning of each additional 3-month period if the period of delinquency exceeds 3 months.

b. If the Government fails to receive annual appropriations in amounts sufficient to meet project expenditures for the then-current or upcoming fiscal year, the Government shall so notify the District. After sixty days either party may elect without penalty to terminate the Agreement or to suspend performance thereunder, and the parties shall conclude their activities relating to the Project and proceed to a final accounting in accordance with Article VI.

ARTICLE XV - CONFIDENTIALITY

To the extent permitted by the law governing each party, the parties agree to maintain the confidentiality of exchanged information when requested to do so by the providing party.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the day and year first above written.

THE DEPARTMENT OF THE ARMY

By John S Doyle Jr

John S. Doyle, Jr.
Acting Assistant Secretary
of the Army

DATE: 6/24/87

THE SANTA CLARA VALLEY WATER DISTRICT

By James J Lenihan

Chairman, Board of ~~Supervisors~~ Directors
Santa Clara VAlley Water District

DATE: June 25 1987

CERTIFICATE OF AUTHORITY

I, Albert T. Henley, do hereby certify that I am the Chief Legal Officer of the Santa Clara Valley Water District, that the Santa Clara Valley Water District is a legally constituted public body with full authority and legal capability to perform the terms of the agreement between the Department of the Army and the Santa Clara Valley Water District in connection with Pajaro River, California (Uvas Creek Levee at Gilroy) project, and to pay damages, if necessary, in the event of the failure to perform in accordance with Section 221 of Public Law 91-611 and that the person who has executed the contract on behalf of the Santa Clara Valley Water District has acted within their statutory authority.

In Witness Whereof, I have made and executed this Certificate this June 25 day of 1987.

Chief Legal Officer
Santa Clara Valley Water District

EXHIBIT D

LOCAL COOPERATION AGREEMENT
(RECREATION)

AGREEMENT BETWEEN
THE DEPARTMENT OF THE ARMY
AND
THE CITY OF GILROY
FOR RECREATION DEVELOPMENT AT
PAJARO RIVER, CALIFORNIA

THIS AGREEMENT, entered into this 27th day of July, 1987 by and between the DEPARTMENT OF THE ARMY (hereinafter called the "Government"), represented by the Acting Assistant Secretary of the Army (Civil Works), and the THE CITY OF GILROY (hereinafter called the "City"), WITNESSETH THAT:

WHEREAS, the Pajaro River, California project (hereinafter called the "Project") was authorized by the Flood Control Act of 1944 (Public Law 78-534), substantially in accordance with the recommendations of the Chief of Engineers in House Document No. 505, 78th Congress, 2nd Session, and subsequently, the authorized project was modified by a Post Authorization Change Notification Report approved on 4 August 1982, such that the reformulated project, described in "Pajaro River, California, Uvas Creek Levee at Gilroy, General Design Memorandum, November 1984," approved 17 June 1985, consists of a levee which will provide flood protection along the left side of Uvas Creek in Gilroy, California and recreational facilities with the recreational facilities of the Project consisting primarily of a hiking trail and bike path along the Project levee; and,

WHEREAS, the Water Resources Development Act of 1986, Public Law 99-662, specifies the cost-sharing requirements applicable to the Project; and,

WHEREAS, the City has the authority and capability to furnish the cooperation hereinafter set forth and is willing to participate in project cost-sharing and financing in accordance with the terms of this Agreement, and,

WHEREAS, the City is authorized to administer Project land and water areas for recreational purposes, and operate, maintain and replace facilities provided for such purposes and is empowered to contract for such purposes, and is empowered to contract in these respects.

NOW THEREFORE, the parties agree as follows:

ARTICLE I - DEFINITIONS

For the purpose of this Agreement:

a. The term "Project" shall mean recreation features consisting of a 1.8 mile long bikeway and 1.6 mile long hiking trail and incidental landscaping. Landscaping consists of trees planted landward of the project levee from Station 60+00 to Station 35+00.

& waterward (See [illegible] SCVWD agreement)

b. The term "total Project costs" means all costs incurred by the City and the Government directly related to construction of the Project (excluding betterments and operation and maintenance costs). Such total Project costs shall include, but not necessarily be limited to, actual construction costs, costs of applicable engineering and design, supervision and administration costs, continuing planning and engineering costs incurred after October 1, 1985 and costs of project construction contract dispute settlements or awards.

c. The term "period of construction" shall mean the time from the advertisement of the first construction contract to the time of acceptance of the project by the Contracting Officer.

d. The term "Contracting Officer" shall mean the Commander of the U.S. Army Engineer District, Sacramento, or his designee.

ARTICLE II - OBLIGATIONS OF PARTIES

a. The City shall provide during the period of construction a cash contribution equal to 50 percent of total project costs.

b. The Government, subject to and using funds provided by the City and appropriated by Congress, shall expeditiously construct the project, applying those procedures usually followed or applied in Federal projects, pursuant to Federal laws, regulations and policies. Award of the Federal contracts and performance of the work thereunder shall be exclusively within the control of the Government.

c. Upon completion of the Project construction, the Government shall turn the Project over to the City, which shall be solely responsible for operating, maintaining, replacing, repairing, and rehabilitating the Project in accordance with Article X of this Agreement.

ARTICLE III - LANDS, FACILITIES, AND RELOCATION ASSISTANCE

a. The land interests necessary to support recreation facilities to be constructed by the Government under this Agreement are to be acquired by local interests for the basic flood control Project.

b. As the Santa Clara Valley Water District is acquiring fee title estates, for flood control Project purposes, in the same land necessary to support the recreation facilities, no additional interests in land will be needed to support recreational development.

c. The recreation facilities which the Government will construct in accordance with this Agreement are indicated in the approved "General Design Memorandum, Pajaro River, California, November 1984." The presently estimated cost of facilities to be provided is contained in Exhibit A, entitled "Estimated Project Costs-Recreation" attached hereto for informational purposes only. Such estimate of facility cost is subject to reasonable adjustment as appropriate during the term of construction.

d. Title to all lands and facilities on which recreation facilities have been developed or constructed by or with Government assistance shall at all times be in the name of a legally constituted public body with full authority and capability to perform the terms of this Agreement. Changes in the title and/or cessation of general recreation uses shall not be made without consent of the District Engineer, Sacramento District, U.S. Army Corps of Engineers, or his successor in authority.

ARTICLE IV - PROJECT PHASING AND MANAGEMENT

a. To provide for consistent and effective communication between the City and the Government during the term of construction, the City and the Government shall appoint representatives to coordinate on scheduling, plans, specifications, modifications, contract costs, and other matters relating to construction of the project.

b. The representatives appointed above shall meet as necessary during the term of Project construction and shall make such recommendations as they deem warranted to the Contracting Officer.

c. The Contracting Officer, having ultimate responsibility for construction of the Project, has complete discretion to accept, reject, or modify the recommendations of the representatives.

ARTICLE V - METHOD OF PAYMENT

a. The City shall provide a cash contribution equal to 50 percent of the total project costs. The aforementioned cash contribution is estimated to be $80,000 to be paid to the Government.

b. The City shall provide its required cash contribution in proportion to the rate of Federal expenditures over the term of the construction period in accordance with the following provisions:

1) Three (3) months before the start of each fiscal year of the City, the Government shall notify the City of the estimated funds that will be required from the City to meet its share of the Project costs for that Government fiscal year. The City shall then make those funds available to the Government as expeditiously as possible through either cash payment or deposit of cash in an escrow account acceptable to the Government. The estimate of total Project costs for the first Government fiscal year of construction will include all costs incurred by the Government prior to the date of this Agreement.

2) 60 days prior to the advertisement of each construction contract, the Government shall notify the City of its required share of contract costs, plus supervisory and administrative expenses, as calculated under paragraph a. of this Article. Within 30 calendar days thereafter, the City shall verify to the satisfaction of the Government that sufficient funds are available to the Government in the funding institution or mechanism referred to in paragraph b.1. of this Article to meet its share of the contract costs. If the Government determines that sufficient sums are not available to it, it shall so notify the City and the City shall deposit said funds within 10 calendar days and provide verification of such deposit. If the contract is expected to extend into more than one Government fiscal year, the City may make the deposit in installments, with each installment to be made prior to each Government fiscal year in the amount required for that year's work on the contract, plus supervisory and administrative costs.

3) When bids are opened on any given contract and additional funds are needed from the City to meet its required share of contract costs, the Government shall so notify the City and the City shall deposit the additional funds within 10 calendar days after demand is made by the Government.

c. The Government will draw on the funds provided by the City such sums as it deems necessary to cover contractual and in-house fiscal obligations as they are incurred, as well as project costs incurred by the Government prior to the initiation of construction.

d. Upon completion of construction and resolution of all contract claims and appeals, the Government shall compute the actual total Project costs and tender the City a final accounting of its share of actual total Project costs. In the event the total contribution by the City is less than its required share of actual total Project costs, the City shall deposit within 90 calendar days after receipt of written notice whatever sum is required to meet its required share of actual total Project costs. The Government shall return to the City within 90 calendar days of the final accounting, subject to the availability of appropriations, such cash contributions to the extent they exceed fifty percent (50%) of actual Project costs.

e. Future Development: Neither party is obligated by this Agreement to undertake any future development of the Project, except to the extent this Agreement may be so modified by future supplemental agreements signed by the parties and approved by the Secretary of the Army or his authorized representative. If at any time the City wishes to undertake further development of the facilities to be developed hereunder, it may do so at its expense provided prior approval of the Contracting Officer is obtained, but the Government shall not be obligated to reimburse the City for any portion of such expense in the absence of a supplemental agreement hereto as aforesaid.

f. Other Federal Funds: No credit of any kind whatsoever will be allowed the City for expenditures financed by, involving, or consisting of, either in whole or in part, contributions or grants of assistance received from any Federal agency, in providing any lands or facilities for recreation enhancement hereunder.

g. Adjustments to Reflect Costs: The dollar amounts set forth in this Article are based upon the Government's best estimates, and are subject to adjustments based on the costs actually incurred. Such estimates are not to be construed as representations of the total financial responsibilities of each of the parties.

ARTICLE VI - CONSTRUCTION AND OPERATION OF ADDITIONAL FACILITIES

Certain types of facilities, including but not necessarily limited to restaurants, lodges, golf courses, cabins, clubhouses, overnight or vacation type structures, stables, swimming pools, commissaries, and such similar revenue-producing facilities, may be constructed and operated by the City. Any such construction and operation of these types of facilities shall be compatible with all Project purposes and shall be subject to the prior approval of the Contracting Officer. However, the City shall not receive credit for costs of such facilities against amounts due and payable under Article V and such facilities shall not be deemed to be developed or constructed with Government assistance for purposes of Article III.d.

ARTICLE VII - FEES AND CHARGES

The City may assess and collect fees for entrance to and use of developed recreation facilities and areas, in accordance with a fee schedule mutually agreed to by the parties. Not less often than every five years, the parties will review such schedule and, upon the request of either, renegotiate the schedule. The renegotiated fee schedule shall, upon written agreement thereto by the parties, supersede the previous fee schedule without the necessity of modifying this contractual document.

ARTICLE VIII - TRANSFER OR ASSIGNMENT

The City shall not transfer or assign this contract nor any rights acquired thereunder, nor grant any interest, privilege, or license whatsoever in connection with this Agreement without the approval of the Secretary of the Army or his authorized representative except as provided in Article VI of this Agreement.

ARTICLE IX - DISPUTES

Before any party to this Agreement may bring suit in any court concerning an issue relating to this Agreement, such party must first seek in good faith to resolve the issue through negotiation or through other forms of non-binding alternative dispute resolution mutually acceptable to the parties.

ARTICLE X - OPERATION, MAINTENANCE, REPLACEMENT, AND REHABILITATION

a. The City shall be responsible for operation, maintenance, replacement, and rehabilitation, without cost to the Government, of all facilities developed to support Project recreation opportunities. The City shall maintain all Project recreation facilities in a manner satisfactory to the Contracting Officer and pursuant to the provisions of any lease or license which may subsequently be entered into between the parties hereto with the exception of lands required for operation of the Project facilities as described in paragraph c. of this Article.

b. The City hereby gives the Government a right to enter, at reasonable times and in a reasonable manner, upon land which it owns or controls for access to the Project for the purpose of inspection, and, if necessary, for the purpose of operating, repairing, replacing, and maintaining the Project. If an inspection shows that the City for any reason is failing to operate, repair, replace, rehabilitate, and maintain the Project recreation facilities in accordance with the assurances hereunder, the Government will send a written notice to the City. If the City persists in such failure for 30 Calendar days after receipt of the notice, then the Government shall have a right to enter, at reasonable times and in a reasonable manner, upon lands the City owns or controls for access to the Project for the purpose of operating, repairing, replacing, or maintaining the Project recreation facilities. No operation, repair, replacement, rehabilitation, or maintenance by the Government shall operate to relieve the City of responsibility to meet its obligations as set forth in this Agreement, or to preclude the Government from pursuing any other remedy at law or equity to assure faithful performance pursuant to this Agreement.

c. The Santa Clara Valley Water District will be responsible for operation and maintenance of those lands, structures, and facilities such as levees, channels, bank protection works and patrol roads required for flood control.

ARTICLE XI - RELEASE OF CLAIMS

The Government and its officers and employees shall not be liable in any manner to the City for or on account of damage caused by the development of the general and recreation facilities of the Project, except for damages due to the fault or negligence of the Government or its contractors. The City hereby releases the Government and agrees to hold it free and harmless and to indemnify it from all damages, claims, or demands that may result from development and operation and maintenance of the general and recreation areas and facilities, except for damages due to the fault or negligence of the Government or its contractors.

ARTICLE XII - MAINTENANCE OF RECORDS

The Government and the City shall keep books, records, documents, and other evidence pertaining to costs and expenses incurred pursuant to this Agreement to the extent and in such detail as will properly reflect all total project costs. The Government and the City shall maintain such books, records, documents and other evidence for a minimum of three years after completion of construction of the Project and resolution of all claims arising therefrom, and shall make available at their respective offices at reasonable times, such books, records, documents and other evidence for inspection and audit by authorized representatives of the parties to this Agreement.

ARTICLE XIII - FEDERAL AND STATE LAW

In acting under its rights and obligations hereunder, the City agrees to comply with all applicable Federal and State laws and regulations including Section 601 of Title VI of the Civil Rights Act of 1964 (Public Law 88-352) and Department of Defense Directive 5500.II issued pursuant thereto and published in Part 300 of Title 32, Code of Federal Regulations, as well as Army Regulation 600-7, entitled "Nondiscrimination on the Basis of Handicap in Programs and Activities Assisted or Conducted by the Department of the Army."

ARTICLE XIV - RELATIONSHIP OF PARTIES

The parties to this Agreement act in an independent capacity in the performance of their respective functions under this Agreement and neither party is to be considered the officer, agent or employee of the other.

ARTICLE XV - OFFICIALS NOT TO BENEFIT

No member of or delegate to the Congress, or resident commissioner, shall be admitted to any share or part of this Agreement, or to any benefit that may arise therefrom.

ARTICLE XVI - COVENANT AGAINST CONTINGENT FEES

The City warrants that no person or selling agency has been employed or retained to solicit or secure this Agreement upon agreement or understanding for a commission, percentage, brokerage, or contingent fee, excepting bona fide employees or bona fide established commercial or selling agencies maintained by the City for the purpose of securing business. For breach or violation of this warranty, the Government shall have the right to annul this Agreement without liability or in its discretion to add to the contract price or consideration, or otherwise recover, the full amount of such commission, percentage, brokerage, or contingent fee.

ARTICLE XVII - TERMINATION OR SUSPENSION

a. If at any time the City fails to make the payments required under this Agreement, the Secretary of the Army shall terminate or suspend work on the Project recreation facilities until the City is no longer in arrears, unless the Secretary determines that continuation of work on the Project recreation facilities is in the interest of the United States. Any delinquent payment shall be charged interest at a rate, to be determined by the Secretary of the Treasury, equal to 150 (one hundred-fifty) percent of the average bond equivalent rate of the 13 week Treasury bills auctioned immediately prior to the date on which such payment became delinquent, or auctioned immediately prior to the beginning of each additional 3 month period if the period of delinquency exceeds 3 months.

b. If the Government fails to receive annual appropriations in amounts sufficient to meet expenditures for the then-current or upcoming fiscal year, the Government shall so notify the City. After sixty days either party may elect without penalty to terminate the Agreement or to suspend performance thereunder, and the parties shall conclude their activities relating to the Project recreation facilities and proceed to a final accounting in accordance with Article V.d.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the day and year first above written.

THE DEPARTMENT OF THE ARMY

By John S Doyle Jr

John S. Doyle, Jr.
Acting Assistant Secretary of the Army
(Civil Works)

DATE: 6/24/87

THE CITY OF GILROY

By Roberta H. Hughan

Mayor,
City of Gilroy

APPROVED AS TO LEGAL FORM AND SUFFICIENCY, INCLUDING THE EFFECT OF SECTION 221, PUBLIC LAW 91-611.

By

CHIEF, LEGAL OFFICER,
City of Gilroy

DATE 7/23/87

AS WITNESSED BY:

CERTIFICATE OF AUTHORITY

I, BRUCE M. JACOBS, do hereby certify that I am the Chief Legal Officer, for the City of Gilroy, that the City of Gilroy is a legally constituted public body with full authority and legal capability to perform the terms of the Agreement between the Department of the Army and the City of Gilroy in connection with the Pajaro River, California project, and to pay damages, if necessary, in the event of the failure to perform in accordance with Section 221 of Public Law 91-611, and that the person who has executed the Agreement on behalf of the City of Gilroy has acted within their statutory authority.

In Witness Whereof, I have made and executed this Certificate this 23 day of JULY, 1987.

Attorney
City of Gilroy

EXHIBIT A

ESTIMATED PROJECT COSTS - RECREATION *
(1 October 1986 Price Level)

Item	Quantity	Unit	Unit Price $	Amount $
RECREATION FACILITIES				
Bicycle Path				
Asphalt Paving (2")	13,500	SY	5.20	70,200
Signs	4	EA	155.00	620
Bollards	1	JOB	LS	1,860
Hiking Trail				
Clearing	6,400	SF	1.60	10,240
Timber Steps	0.7	MBF	900.00	630
Water	5	MGAL	7.00	35
Fence (6' Chainlink)	650	LF	8.30	5,395
Landscaping	1	JOB	LS	3,100
Subtotal				92,080
Contingencies 20%±				17,920
TOTAL RECREATION FACILITIES				110,000
ENGINEERING AND DESIGN				25,000
SUPERVISION AND ADMINISTRATION				15,000
TOTAL SEPARABLE RECREATION FIRST COST				150,000

* Figures do not include an adjustment for inflation

EXHIBIT E

LETTERS OF ACCEPTANCE

City of Gilroy
7351 Rosanna Street
GILROY, CALIFORNIA
95020

Telephone (408) 842-3191

JAY BAKSA
CITY ADMINISTRATOR

September 28, 1988

Mr. Jack A. Le Cuyer
Colonel, Corps of Engineers
District Engineers
Dept. of the Army
Sacramento District Corps of Engineers
650 Capitol Mall
Sacramento, CA 95814-4794

Attn: Navigation and Flood Control

RE: Pajaro River California Project (Contract Number DACW05-87-C-0098,
Specification Number 7495 and Drawing Number PA-18-4-05

Dear Colonel Le Cuyer:

Please accept this letter as one acknowledging completion and acceptance of the Uvas Levee Project - Phase I.

This acceptance is based upon drainage, water, sewer, street systems, and a recreation element (bicycle path, signs, bollards, and chain link fence).

We are extremely pleased with the overall results of the levee as we are experiencing increasing use of the recreational element. We look forward to continued cooperation with the Corps in our future phases.

Please feel free to contact me should you need further information.

Sincerely,

Jay Baksa,
City Administrator

Santa Clara Valley Water District
5750 ALMADEN EXPRESSWAY
SAN JOSE, CALIFORNIA 95118
TELEPHONE (408) 265-2600
AN AFFIRMATIVE ACTION EMPLOYER

October 7, 1988

Colonel Jack A. Le Cuyer
District Engineer
Department of the Army
Sacramento District Corps of Engineers
650 Capitol Mall
Sacramento, CA 95814-4794

Dear Colonel Le Cuyer:

You may consider this our written acceptance of the completed work on the Phase I portion of the Uvas Creek-Pajaro River Project, near Gilroy, California, as requested in your September 7, 1988 letter.

The City of Gilroy's Parks Department staff have agreed to maintain the landscaping on the waterward side of the levy. A separate agreement between the City of Gilroy and our District is being prepared.

We request that the Operations and Maintenance Manual for the Pajaro River Project contain a discussion of the landscaping separate from the levee maintenance. We intend to transfer the Operations and Maintenance Manual, particularly the section regarding landscape maintenance, to the City of Gilroy.

If you have any questions regarding the sharing of maintenance obligations between the City of Gilroy and the District, please contact Mr. Bruce Wilson, head or our Engineering Services Division, at extension 305.

Sincerely,

Robert R. Smith
Flood Control Manager

cc: Norm Allen
City of Gilroy
7351 Rosanna Street
Gilroy, CA 95020

Santa Clara Valley Water District
5750 ALMADEN EXPRESSWAY
SAN JOSE, CALIFORNIA 95118
TELEPHONE (408) 265-2600

AN AFFIRMATIVE ACTION EMPLOYER

February 10, 1989

Colonel Jack A. Le Cuyer
District Engineer
Department of the Army
Sacramento District Corps of Engineers
650 Capitol Mall
Sacramento, CA 95814-4794

Dear Colonel Le Cuyer:

You may consider this our written acceptance of the completed work on the Phase II (Station 0+00 to Station 29+00) portion of the Uvas Creek-Pajaro River Project, hear Gilroy, California, as requested in your January 30, 1989 letter.

The City of Gilroy's Parks Department staff have agreed to maintain the landscaping on the waterward side of the levee. A separate agreement between the City of Gilroy and our District is expected to be signed in March, 1989.

We would appreciate having one set of reproducible "As-Constructed" drawings for both Phase I and Phase II levee construction projects when they area available.

Sincerely,

Robert R. Smith
Flood Control Manager

cc: Mr. Norm Allen
City Engineer
City of Gilroy
7351 Rosanna Street
Gilroy, CA 95020

Mr. Bill Headley
Parks Superintendnet
City of Gilroy
7351 Rosanna Street
Gilroy, CA 95020

PARKS & RECREATION DEPARTMENT

Telephone (408) 842-0221

City of Gilroy

7351 Rosanna Street
GILROY, CALIFORNIA
95020

ROBERT J. CONNELLY
DIRECTOR

April 18, 1989

Department Of The Army
Mr. Jack A. Le Cuyer
Colonel, Corps of Engineers

Dear Colonel Le Cuyer:

We have reviewed the attached letter of January 30, 1989 concerning acceptance of completed portion of recreation features of Pajaro River California Project for operation and maintenance. In accordance with the local cooperation agreement, we formally accept this work.

Sincerely,

Robert J Connelly

Bob Connelly, Director

Attachment (1)

cc Norman S. Allen, City Engineer
Santa Clara Water District

Santa Clara Valley Water District
5750 ALMADEN EXPRESSWAY
SAN JOSE, CALIFORNIA 95118
TELEPHONE (408) 265-2600

AN AFFIRMATIVE ACTION EMPLOYER

April 25, 1989

Mr. Ken Myers, P.E.
Civil Design, Section C
U.S. Army Corps of Engineers
650 Capital Mall
Sacramento, CA 95814-4794

Dear Ken:

Enclosed is a copy of the fully executed agreement between the City of Gilroy and Santa Clara Valley Water District for the landscape maintenance work on Uvas Creek.

I have also attached an agenda explanation which describes the general conditions of the agreement.

Sincerely,

Bruce Wilson
Bruce Wilson
Division Engineer
Engineering Services Division

Enclosures

CONFORMED COPY

AGENDA MEMORANDUM

#A1013

AGENDA DATE 2/28/89 ITEM NO. 6 UNIT Flood Control

ZONE S PROJECT NO. 5018 NAME Uvas Carnadero Creek (Gilroy & Unincorporated)

SUBJECT: Agreement with City of Gilroy for Operation and Maintenance of Landscaping on Uvas Creek.

EXPLANATION:

The Local Cooperation Agreement on the Uvas Creek Project between the District and the U.S. Army Corps of Engineers requires that the local sponsor (the District) operate and maintain the project after it is constructed, in accordance with the Corps Standard Operations and Maintenance Manual. This Manual covers the maintenance of the levee and revegetation installed by the Corps. However, since it would be more efficient for the District to maintain only the flood control elements of the project, staff has requested and the City of Gilroy has agreed that the City relieve the District from the responsibility for and cost of maintaining the revegetation aspect of the project. The subject Agreement specifies that the City will maintain the revegetation and the District will maintain the flood control features of the project. A copy of the fully executed Agreement will be sent to the Corps as evidence that the responsibility for the maintenance of the revegetation portion of the project has been accepted by the City of Gilroy.

RECOMMENDATION: That the General Manager be authorized to execute the Agreement.

AUTHORIZED

FEB 28 1989

AGREEMENT BETWEEN THE CITY OF GILROY AND SANTA CLARA VALLEY WATER DISTRICT

LANDSCAPE MAINTENANCE WORK FOR THE UVAS CREEK AREA FROM THOMAS ROAD TO SANTA TERESA BOULEVARD

This Agreement is made and entered into between SANTA CLARA VALLEY WATER DISTRICT, a public corporation, whose address is 5750 Almaden Expressway, San Jose, California, 95118, hereinafter called "DISTRICT", and the CITY OF GILROY, a municipal corporation, whose address is 7351 Rosanna Street, Gilroy, California, 95020, hereinafter called "CITY".

RECITALS

A. DISTRICT is the owner of certain easements generally located in and adjacent to Uvas Creek between Thomas Road and Santa Teresa Boulevard, in CITY, as more particularly shown on the map attached hereto as Exhibit A and made a part hereof, which easements cover areas of CITY lands devoted to recreational and park uses.

B. It is the intention of this Agreement to provide for landscape and flood control maintenance work on this site (hereinafter "the property") and to assign the responsibility for performing the work and for paying the cost thereof.

AGREEMENT

1. CITY shall, at its cost, provide for landscape maintenance of the property. The landscape maintenance tasks contemplated by the parties include such tasks as litter control, pruning, watering, fertilizing and plant replacement and such other tasks as may be specified by the U. S. Army Corps of Engineers (Corps) in an OPERATIONS AND MAINTENANCE MANUAL for the property.

Landscaping shall be managed as natural streamside habitat after it becomes established on the waterward side of the levee, and be consistent with resources management practices in the Uvas Park Preserve Master Plan adopted in October 1983.

2. DISTRICT shall, at its cost, provide for maintenance of the flood control works heretofore installed by the Corps on the property all as may be required by said OPERATIONS AND MAINTENANCE MANUAL prepared by the Corps for the property.

3. DISTRICT hereby indemnifies and will defend and hold harmless CITY from and on account of any liability or claim, arising out of any negligence, willful or intentional acts or omissions of any agent, officer or employee of the DISTRICT while performing under the terms of this Agreement.

4. CITY hereby indemnifies and will defend and hold harmless DISTRICT from and on account of any liability or claim arising out of any negligence, willful or intentional acts or omissions of any agent, officer or employee of the CITY while performing under the terms of this Agreement.

5. This Agreement can be terminated by either party, effective July 1 of any contract year, upon not less than three (3) months' written notice of termination. No termination shall become effective upon a date other than July 1 of the contract year without the express written consent of both parties.

6. All notices and communications required herein shall be in writing and addressed to other party as follows, unless expressly changed in writing:

TO "CITY":
City of Gilroy
Parks Superintendent
7351 Rosanna Street
Gilroy, CA 95020

TO "DISTRICT":
Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, CA 95118

7. This Agreement is dated 3/14, 1989.

"CITY":

CITY OF GILROY,
a municipal corporation

By: s/ JAY BAKSA
City Administrator

APPROVED AS TO CONTENT:

s/ ROBERT J. CONNELLY

APPROVED AS TO FORM:

s/ BRUCE W. JACOB
City Attorney

"DISTRICT":

SANTA CLARA VALLEY WATER DISTRICT,
a public corporation

By: /S/ JOHN T. O'HALLORAN FEB 28 1989
General Manager

APPROVED AS TO FORM:

/S/ ALBERT T. HENLEY
General Counsel

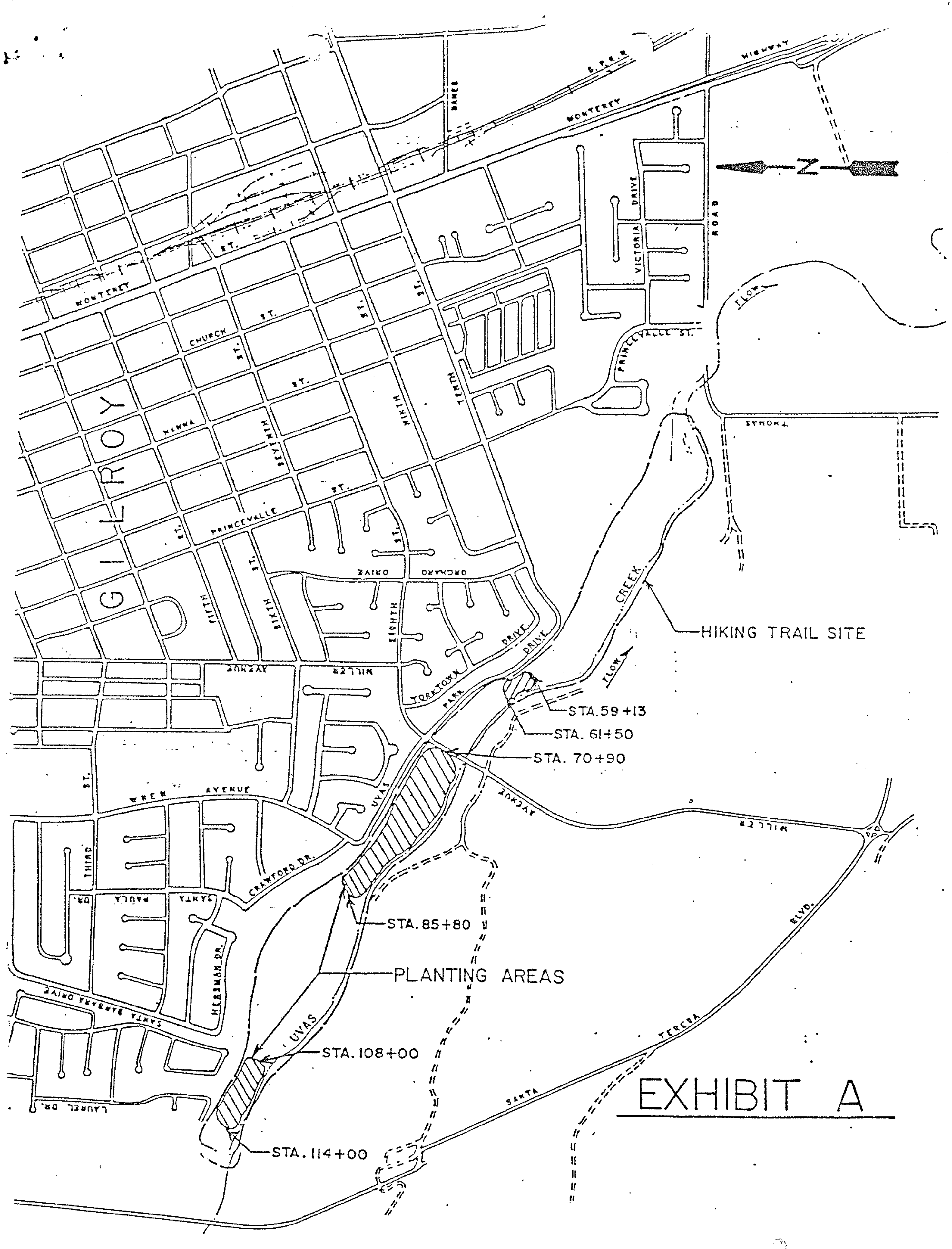
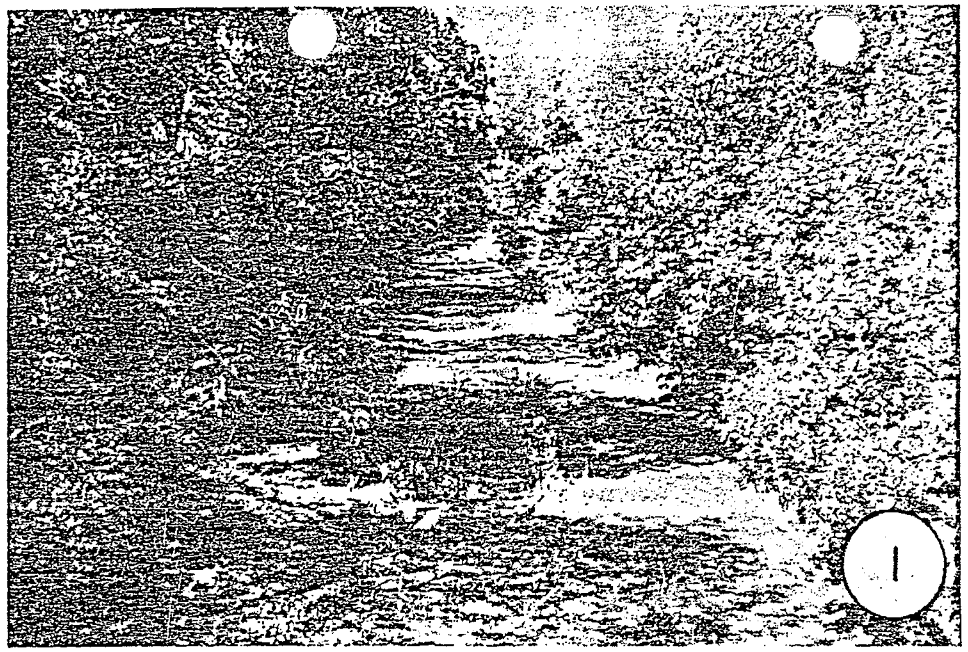
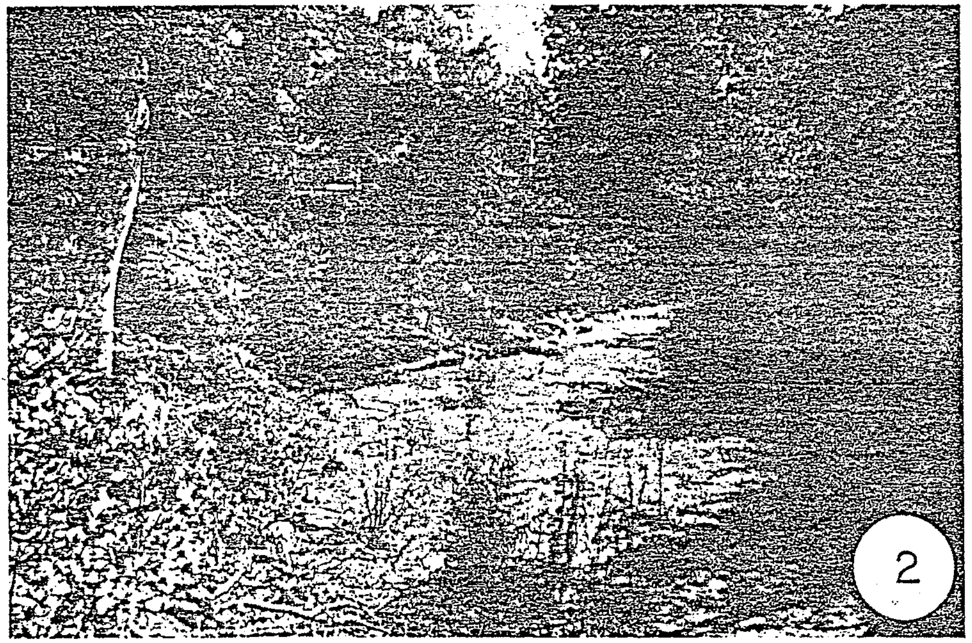

GILROY
MONTEREY HIGHWAY
S.P.R.R.
BANES
MONTEREY ST.
CHURCH ST.
PRINCEVALLE ST.
HANNA ST.
FIFTH
SIXTH ST.
SEVENTH ST.
EIGHTH ST.
NINTH
TENTH
ORCHARD DRIVE
VICTORIA DRIVE
ROAD
THOMAS
N
FLOW
UVAS CREEK
HIKING TRAIL SITE
MILLER AVENUE
YORKTOWN DRIVE
PARK DRIVE
STA. 59+13
STA. 61+50
STA. 70+90
WREN AVENUE
THIRD ST.
PAULA DR.
SANTA
CRAWFORD DR.
HERSMAN DR.
SANTA BARBARA DRIVE
LAUREL DR.
STA. 85+80
PLANTING AREAS
UVAS
STA. 108+00
STA. 114+00
SANTA TERESA BLVD.

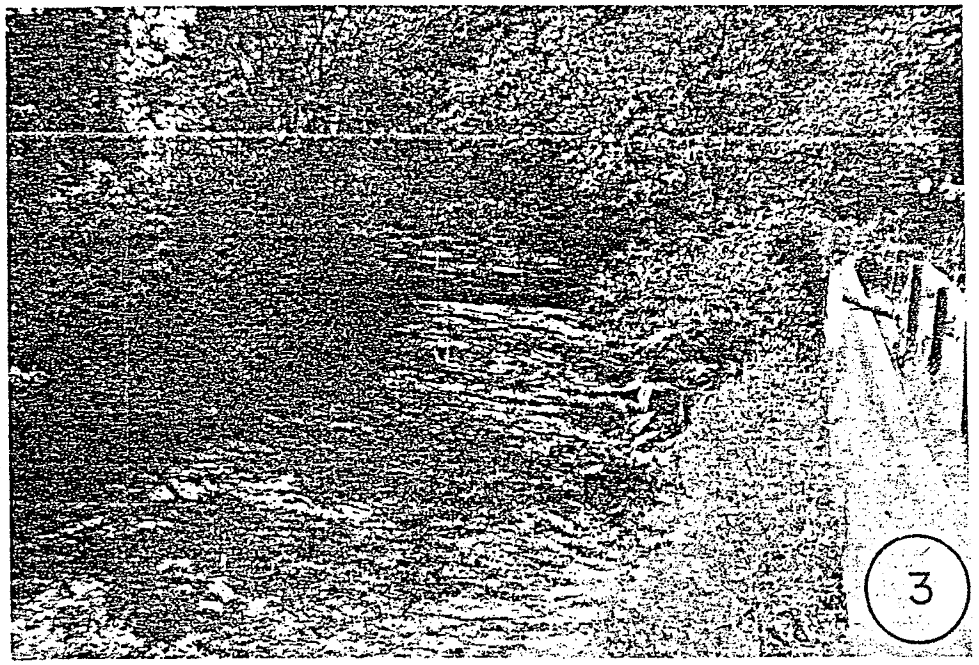
EXHIBIT A

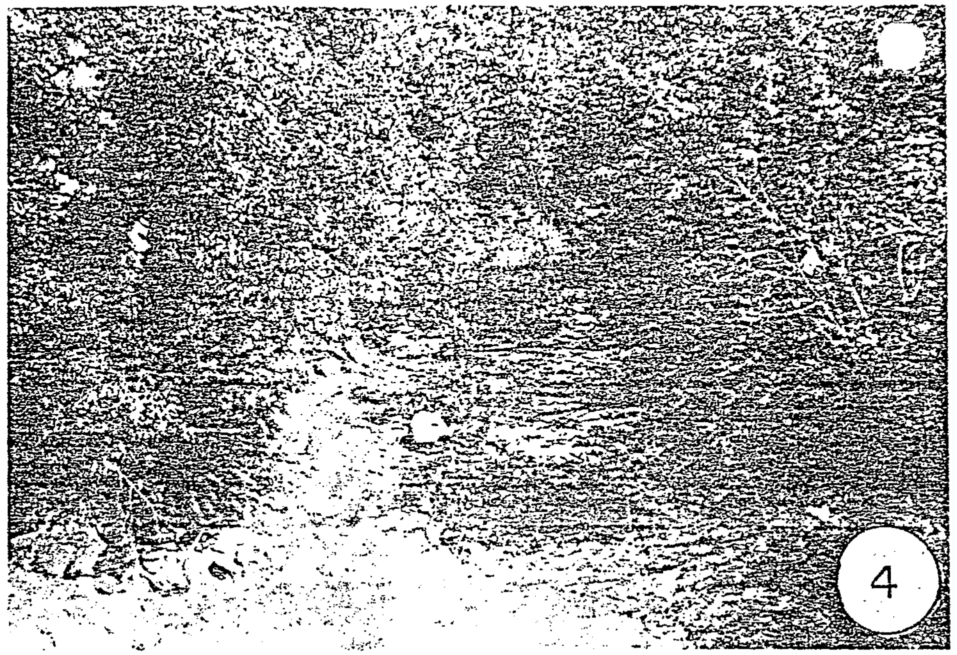
EXHIBIT F

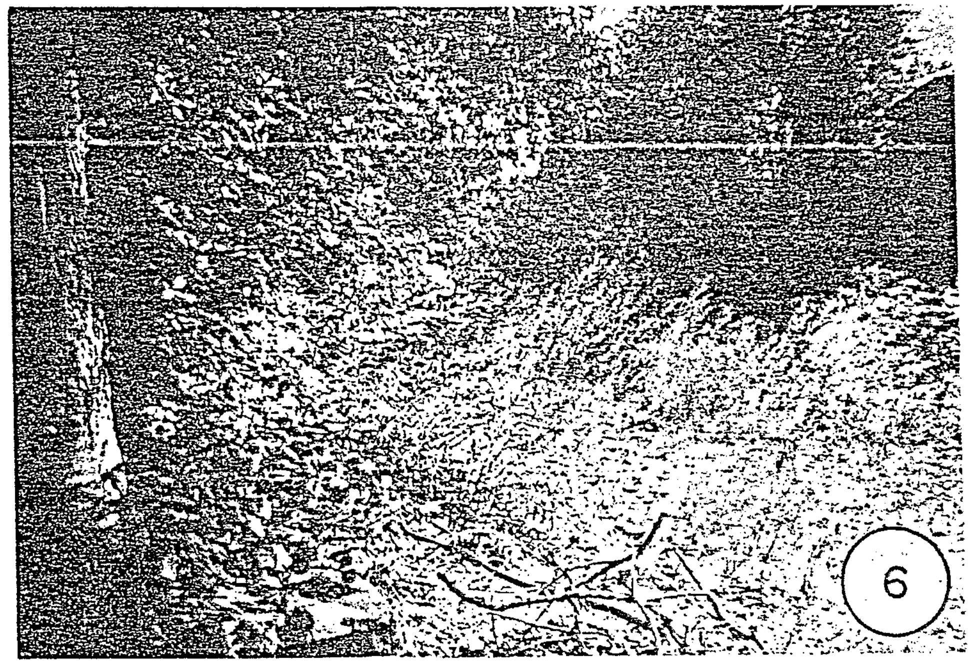
DOWNSTREAM CHANNEL MAINTENANCE PHOTOGRAPHS

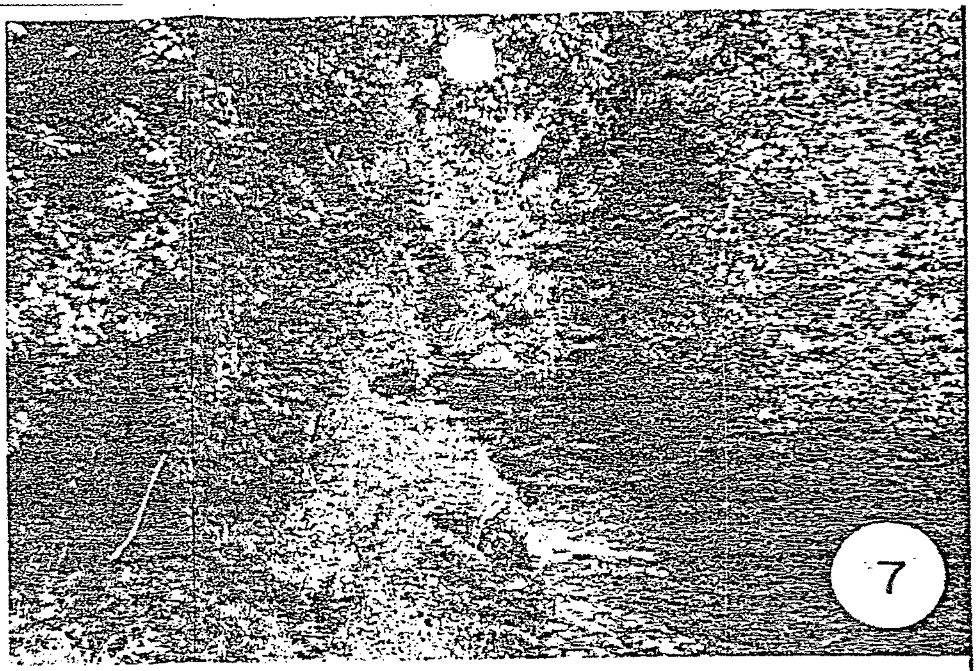












Photograph key

1. View upstream from Bloomfield Avenue
2. View downstream from Bloomfield Avenue
3. View upstream from SPRR bridge
4. View downstream from SPRR bridge
5. View upstream from State Highway 101
6. View downstream from State Highway 101
7. View upstream from Hollister Road

PAJARO RIVER, CALIFORNIA
(UVAS CREEK LEVEE AT GILROY)

DOWNSTREAM CHANNEL MAINTENANCE PHOTOGRAPHS

SACRAMENTO DISTRICT
US ARMY CORPS OF ENGINEERS

EXHIBIT G

SUGGESTED CHECKLISTS

INSPECTION CHECKLIST
FOR
LEVEES AND CHANNELS

Inspector ______________________ Date ______________

Superintendent ______________________ Sheet No. ______________

ITEM	REMARKS
A) Location by creek and levee station	
B) Landside levee conditions	
C) Waterside levee conditions	
D) Evidence of seepage	
E) Channel bed conditions	
F) Extent of vegetative growth	
G) Accumulation of debris and refuse	
H) Condition of riprap	
I) Condition of roadways and ramps	
J) Condition of gates and fences	
K) New construction or encroachment within right-of-way	
L) Measures taken since last inspection	
M) Condition of mitigation landscaping	
M) Comments	

EXHIBIT G

Sheet 1 of 4

INSTRUCTIONS FOR COMPLETING INSPECTION CHECKLIST FOR LEVEES AND CHANNELS

ITEM A) Indicate levee station corresponding to plans of project or, on the downstream channel, the river mile.

ITEM B) Indicate condition of the levee landside embankment and levee crown. Note if there is any settlement, sloughing, loss of grade or erosion on the levee. Indicate amount of settlement to tenths of a foot. Indicate the new slope if sloughing has occurred. Indicate extent of erosion if it occurred.

ITEM C) Indicate condition of the levee waterside embankment. Note if there is any settlement, sloughiing, loss of grade or erosion on the levee. Indicate amount of settlement to tenths of a foot. Indicate the new slope if sloughing has occurred. Indicate extent of erosion if it occurred. Indicate any evidence of rodent holes and the extent to which it occurred.

ITEM D) Indicate any evidence of seepage through the embankment section, such as boils, drainage pipe leaks, etc.

ITEM E) Indicate condition of the channel invert. Note the extent of aggradation or degradation. Indicate any change in channel grade or alignment. Note amount of sediment buildup such as shoals or extent of scouring.

ITEM F) Note nature, extent and size of vegetal growth within the limits of the flood flow channel.

ITEM G) Note nature and extent of debris and refuse that might interfere with flow capacity of the channel or flood fighting operations. This includes clogging of conduits, interference with gates or bridges and obstructing channel flow.

ITEM H) Indicate condition of riprap. Note if the rock has been deteriorated or damaged. Note any movement of rock or if any erosion has taken place. Note the presence of any vegetal growth through the riprap.

ITEM I) Indicate condition of roadways and ramps. Note any changes such as potholes,undulations, or any other damage. Note any inadequacy in surface drainage system.

ITEM J) Indicate the condition of all gates across the embankment section. Note if any maintenance is required, such as painting.

ITEM K) Indicate any construction along the project right-of-way. Note any new structure which encroaches the right-of-way.

ITEM L) Indicate any maintenance measures that have been performed since inspection, and their present condition.

ITEM M) Indicate the condition of waterside mitigation landscaping. Note if any maintenance is required such as watering, weeding, pruning or spraying. Indicate condition of irrigation system and sprinklers.

ITEM N) Note any comments and observations not covered under other items.

EXHIBIT G
Sheet 2 of 4

INSPECTION CHECKLIST
FOR
RECREATION FEATURES

Inspector ______________________ Date ______________

Superintendent ______________________ Sheet No. ______________

ITEM	REMARKS
A) Location by creek and levee station	
B) Condition of landside recreation landscaping	
C) Condition of bike trail	
D) Condition of hiking trail	
E) Accumulation of debris and refuse	
F) Condition of gates, fences and bollards	
G) New construction or encroachment within right-of-way	
H) Measures taken since last inspection	
I) Comments	

EXHIBIT G

Sheet 3 of 4

INSTRUCTIONS FOR COMPLETING INSPECTION CHECKLIST FOR RECREATION FEATURES

ITEM A) Indicate levee station corresponding to plans of project.

ITEM B) Indicate the condition of landscaping. Note if any maintenance is required such as watering, weeding, pruning or spraying.

ITEM C) Indicate the condition of the asphalt paved bike trail. Note cracking, potholes, undulations or other damage.

ITEM D) Indicate the condition of the graded earth hiking trail. Note any changes and report any inadequacies in surface drainage.

ITEM E) Note nature and extent of debris and refuse.

ITEM F) Indicate condition of gates and fences along the levee, and bollards at bicycle and pedestrian access points.

ITEM G) Indicate any construction along the project right-of-way. Note any new structures which encroach the project right-of-way.

ITEM H) Indicate any maintenance measures that have been performed since the last inspection and their present condition.

ITEM I) Note any comments and observations not covered under the other items.

EXHIBIT G
Sheet 4 of 4

EXHIBIT H

SUGGESTED SEMI-ANNUAL REPORT FORM

TO: District Engineer
San Francisco District
U.S. Army Corps of Engineers
211 Main Street
San Francisco, CA 94105-1905

(1 May 19__)
(1 Nov 19__)

Dear Sir:

The semi-annual report for the period of (1 May 1989 to 31 October 1989 or 1 November 19__ to 30 April 19__) for the Uvas Levee project, Santa Clara County, California is as follows:

A) The condition of the mitigation plantings is summarized as follows:

undor contract

(Superintendent's summary of conditions may be inserted here)

The est

It is our intention to perform (within 6 months) the following maintenance operations in order to repair or correct the conditions indicated above:

(Superintendent's summary of maintenance operations for the following 6 months)

B) During this report period major high water periods (water surface reached or exceeded the toe of the project levee) occurred on the following dates:

STREAM	GAGE STATION	DATE	MAXIMUM ELEVATION

EXHIBIT H
Sheet 1 of 2

Comments on the behavior of the protective works during such high water periods are as follows:

(Superintendent's log of flood observations)

During the high water stages when the water level reached a height of ______________ , on the gage or excess thereof (dates) __________ , it was necessary to organize and carry out flood operations as follows:

(See Maintenance Manual ______________________ .)

C) The inspections have indicated (no) or (the following) encroachments or trespasses upon the project right-of-way.

D) (No) (______________________) permits have been issued for (the following improvements) or (construction within) the project right-of-way.

Executed copies of the permit documents issued are transmitted for your files.

E) The status of maintenance measures, indicated in the previous semi-annual report as being required or as suggested by the representatives of the District Engineer, is as follows:

(Statement of maintenance operations, item by item with percent completion)

F) The fiscal statement of the Superintendent's operations for the current report period is as follows:

	Labor	Material	Equipment	Overhead	Total
1. Inspection					
2. Maintenance					
3. Flood Fighting Operations					
TOTAL					

Respectfully submitted,

____

Superintendent of Works

EXHIBIT H
Sheet 2 of 2

EXHIBIT I

SAMPLE PERMIT
FOR
USE OF RIGHT-OF-WAY

PERMIT
FOR
RIGHT-OF-ENTRY

____
(Name of Flood Control District)

____
(Location)

Permission is hereby granted to:

______________________ ______________________
(Name of Firm or Individual) (Address)

TO: (Describe in these spaces the proposal, including kind and type of construction, purpose intended, location by stationing. Indicate passageway provided by means of gates, etc. Use separate sheets if necessary, identifying each by reference herein.)

____

____

____

____

PROVIDED THAT:

Upon termination or expiration of this permit (whether by voluntary relinquishment by the grantee, by revocation by the grantor or otherwise) the grantee shall remove all structures, improvements, or appurtenances which may have been erected or constructed under this permit, and shall repair or replace any portion of the flood protection structure or right-of-way which may have been damaged by his operations (including grading and seeding, or sodding, if necessary), to the satisfaction of the grantor.

The structure or operation for which this permit is issued shall be maintained by the grantee in such manner as shall not injure or damage the flood protection structure, or interfere with its operation and maintenance in accordance with regulations of the Secretary of the Army.

The structure or operation covered by this permit may be damaged, removed or destroyed by the grantor in time of flood emergency if such action is determined by the grantor to be necessary in order to preserve life or property or prevent damage or impairment to the use or safety of the flood protection structure, and the grantor shall not be liable to the grantee for such damage or destruction.

Unless otherwise specifically provided herein, this permit may be canceled at any time by the grantor

Exhibit I
Sheet 1 of 2

upon 10 days written notice mailed to the address shown above. During such 10 day period, (or such other period as may be provided herein), the grantee will be permitted to remove any property or improvements installed under this permit, and to repair or replace any damage to the flood protection right-of-way or structures resulting from his use or operations. At the end of such period, the grantor shall have the right to possess and dispose of any such property or improvements remaining upon its right-of-way, and may proceed to repair or replace any such damage, and the grantee herein shall be liable to the grantor for the full cost of such repairs or replacements.

The construction, installation and maintenance of the structure or structures covered by this permit shall be subject to inspection by representatives of the grantor and the United States at all reasonable times.

In the event the work covered by this permit consists of or includes major construction, the cost of inspection thereof by the grantor and/or the United States shall be paid by the applicant.

Grantee agrees that it will not use the area or facilities covered by this permit, or permit such area to be used, for any purpose other than is specifically covered by this permit.

(Use these spaces for special considerations applicable to this permit.)

____

____

____

THIS PERMIT SHALL NOT BE VALID UNTIL APPROVED BY THE DISTRICT ENGINEER OF THE U.S. ARMY ENGINEER DISTRICT, SAN FRANCISCO, OR HIS AUTHORIZED REPRESENTATIVE.

Signature (Grantor)	(Title)	(Date)

Terms of this permit are hereby accepted.

Signature (Grantee)	(Date)

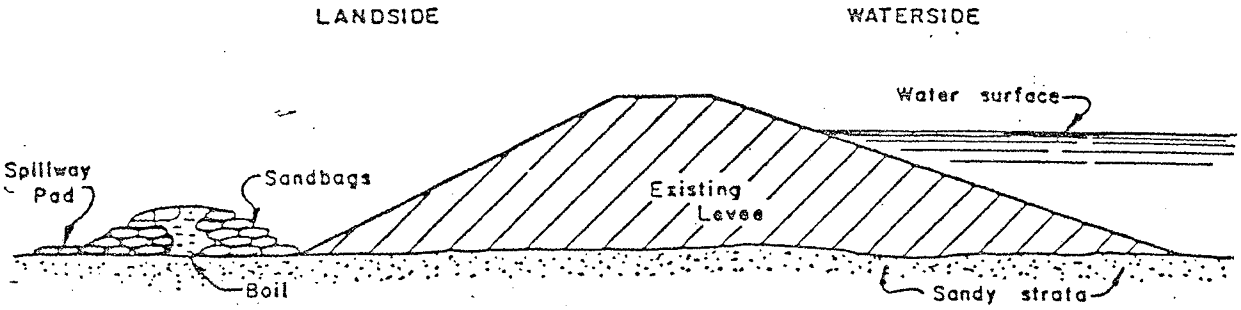
Approved:

District Engineer	(Date)

Exhibit I
Sheet 2 of 2

EXHIBIT J

PLATES OF SUGGESTED FLOOD FIGHTING METHODS



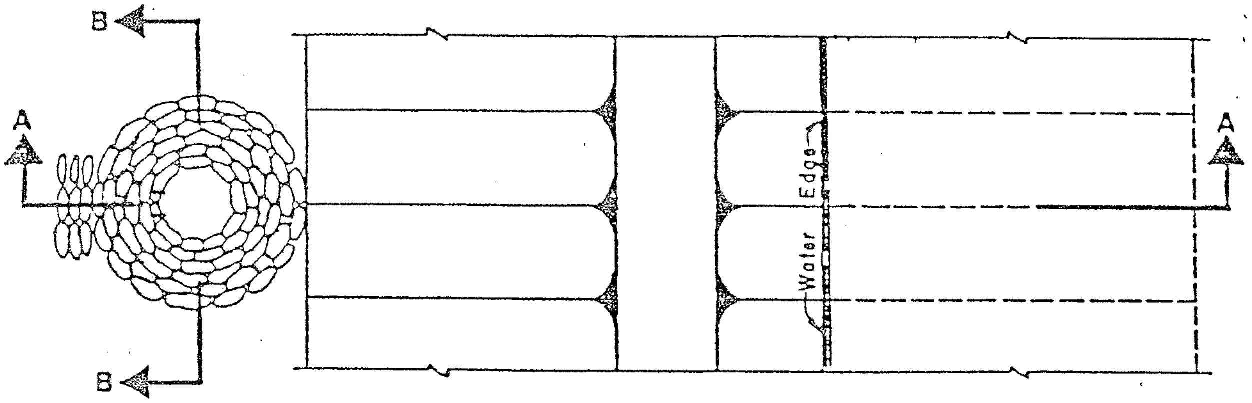
SECTION A - A

NOTE:

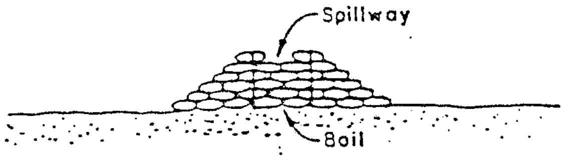
Bottom width to be no less than 1.5 times height.

Be sure to clear sand discharge.

Tie into levee if boil is near toe.



PLAN



SECTION B - B

NOTE:

Do not sack boils which do not put out material.

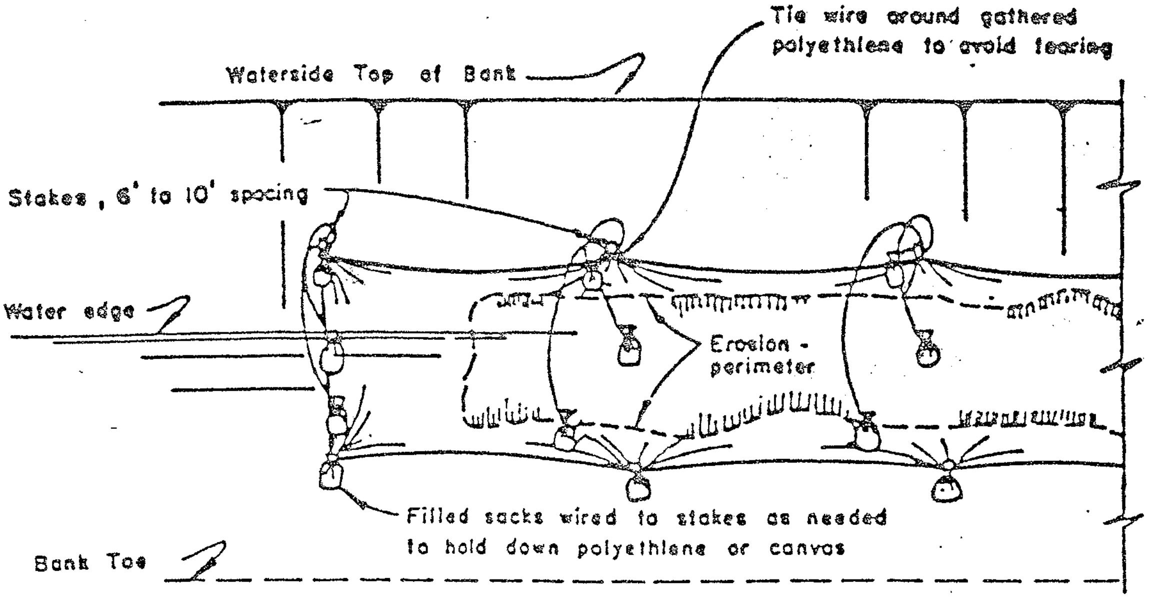
Height of sack loop or ring should be only sufficient to create enough head to slow down flow through boil so that no more material is displaced and boil runs clear.

Never attempt to stop completely the flow through a boil.

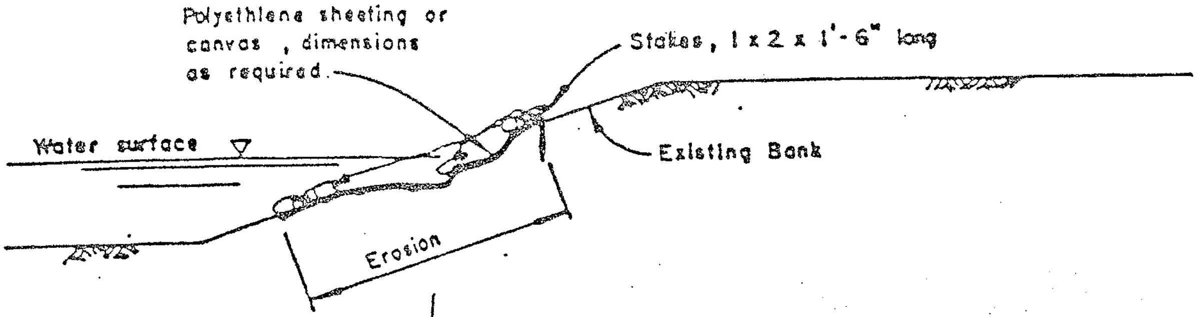
PAJARO RIVER, CALIFORNIA
(UVAS CREEK LEVEE AT GILROY)

PLATE 1
CONTROL OF SAND BOILS

SACRAMENTO DISTRICT
US ARMY CORPS OF ENGINEERS


Tie wire around gathered polyethlene to avoid tearing
Waterside Top of Bank
Stakes, 6' to 10' spacing
Water edge
Erosion - perimeter
Filled sacks wired to stakes as needed to hold down polyethlene or canvas
Bank Toe

PLAN


Polyethlene sheeting or canvas, dimensions as required.
Stakes, 1 x 2 x 1'-6" long
Water surface
Existing Bank
Erosion

SECTION

NOTE:

Use polyethylene sheets, preferably 16' to 20' wide, available in standard 100' long rolls, approximately 6 mil thickness, or use canvas sheets as available. Lay length of sheeting parallel to edge of bank top. Tie upper edge to stakes and tie sacks to bottom edge. Crew will then simultaneously toss all bottom sacks over damaged slope to avoid tearing. Remaining intermediate sacks will be immediately placed as shown to hold down sheeting. Have ALL items prepared beforehand. Begin laying sheets from downstream end of erosion to enable correct lapping of sheets. Overlap edges a minimum of 2 feet.

BILL OF MATERIAL FOR 100 FEET

LUMBER

30 Sharpened stakes 1" x 2" x 18"

SANDBAGS

120 Bags

SHEETING

Polyethylene or Canvas sheeting as required

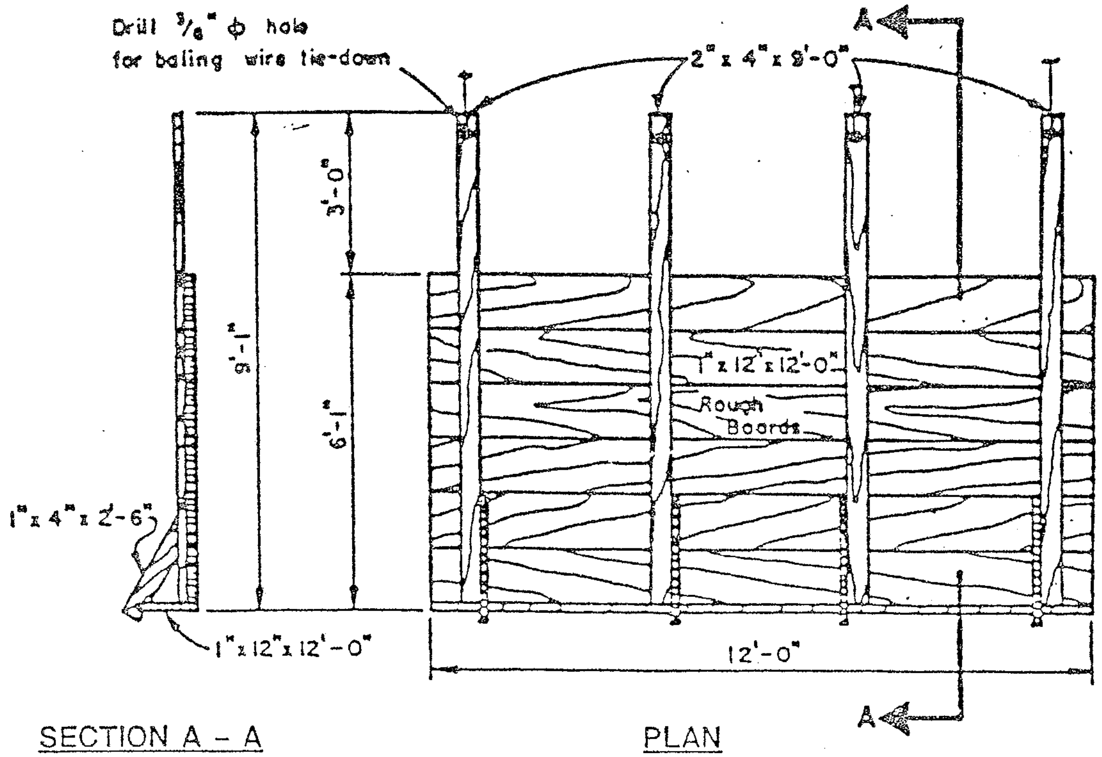
WIRE

650 ft. 16 Gauge Baling Wire

PAJARO RIVER, CALIFORNIA
(UVAS CREEK LEVEE AT GILROY)

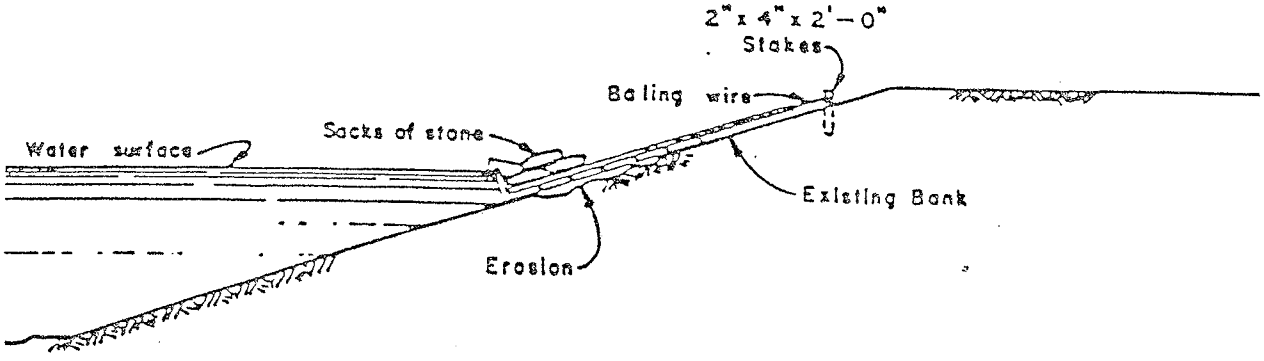
PLATE 2
WAVE WASH PROTECTION

SACRAMENTO DISTRICT
US ARMY CORPS OF ENGINEERS



SECTION A - A

PLAN



ELEVATION

BILL OF MATERIAL FOR 100 FEET

LUMBER

56 pieces	1" x 12" x 12'-0"
32 pieces	1" x 4" x 2'-6"
32 pieces	2" x 4" x 9'-0"
*32 pieces	2" x 4" x 2'-0"

*sharpened

WIRE

200 ft. Baling Wire

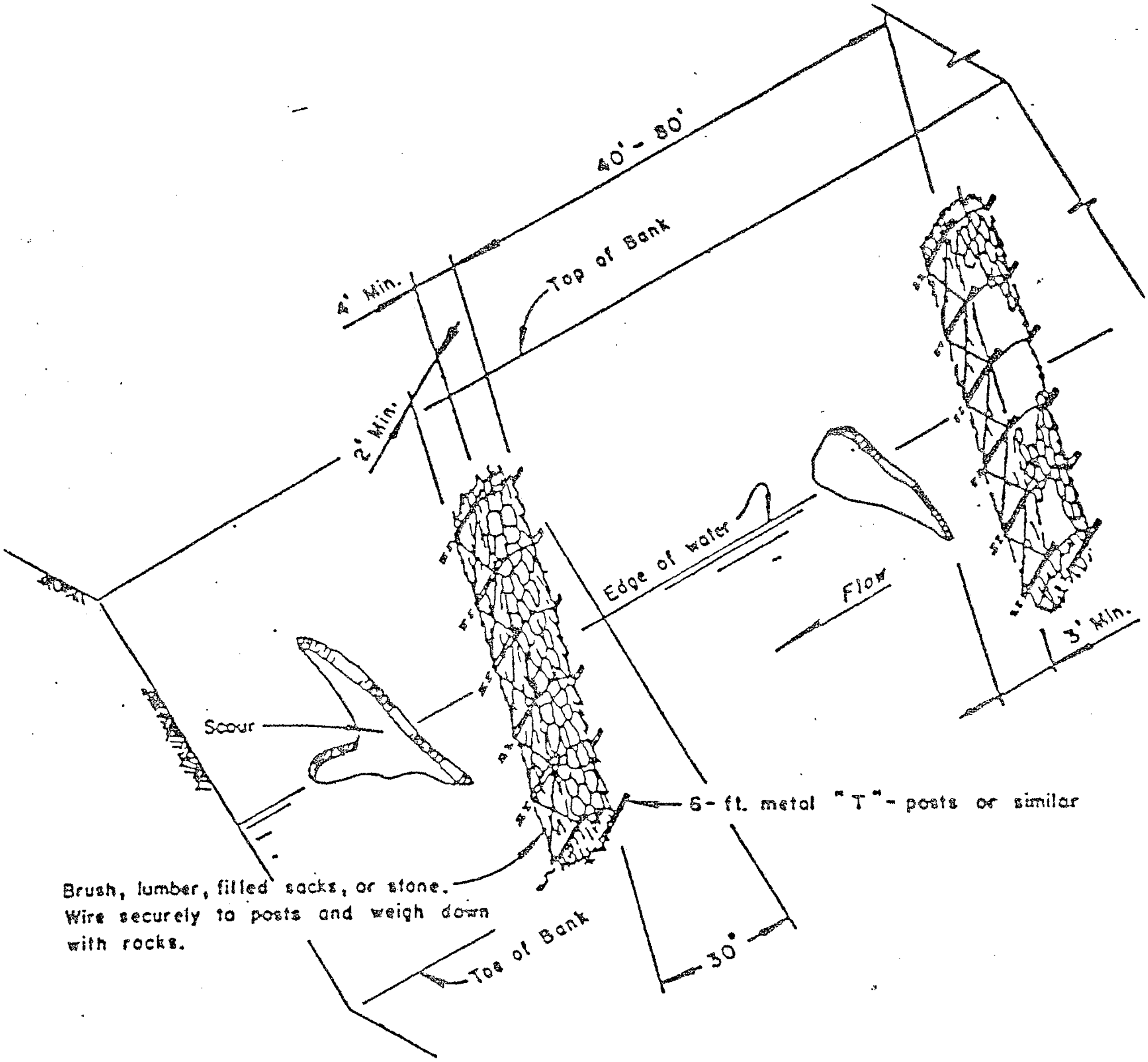
NAILS

4-1/2 lbs. 8d nails

PAJARO RIVER, CALIFORNIA
(UVAS CREEK LEVEE AT GILROY)

PLATE 3
MOVABLE WAVE WASH PROTECTION

SACRAMENTO DISTRICT
US ARMY CORPS OF ENGINEERS


40' - 80'
Top of Bank
2' Min.
2' Min.
Edge of water
Flow
3' Min.
Scour
6- ft. metal "T"- posts or similar
Brush, lumber, filled sacks, or stone. Wire securely to posts and weigh down with rocks.
Toe of Bank
30°

PAJARO RIVER, CALIFORNIA
(UVAS CREEK LEVEE AT GILROY)

PLATE 4

DEFLECTION DIKE FOR SCOUR CONTROL

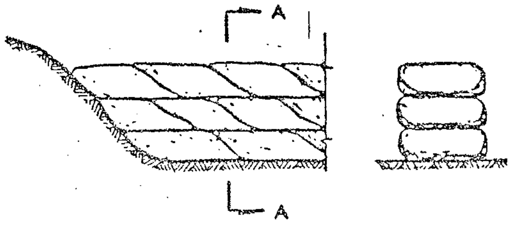
SACRAMENTO DISTRICT
US ARMY CORPS OF ENGINEERS

LEVEE CONSTRUCTION

Sandbagging is used to prevent overtopping of existing levees and for retaining flood waters where no back up material is available.

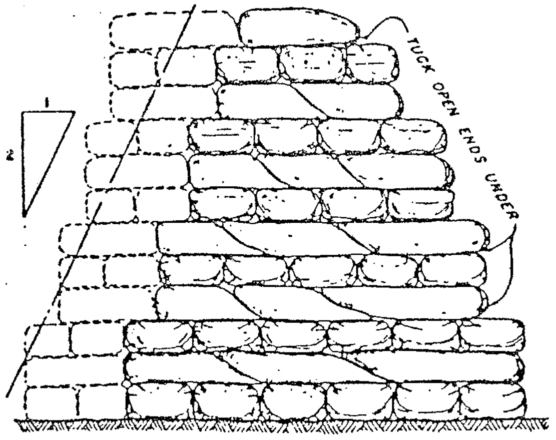
INSTRUCTIONS

1. Fill sandbags 1/2 to 1/3 full but leave enough flap to turn under. Do not tie. Leave ends open.
2. For heights of one foot or less, lay 3 single courses with sacks lengthwise as shown in sketch "A" below.
3. For heights greater than one foot, place as indicated in sketch "B" below.
4. When bags are placed, flatten out and fill voids by mashing bags with feet and vigorously tramp each course of the levee section. This is an extremely important operation for providing a levee which will be as impervious to water as possible and to insure stability of section. Loosely placed sandbags, improperly keyed together, may result in failure and cause serious damage.



ELEVATION SECTION A-A

SKETCH "A"



LEVEE SECTION

For heights in excess of the above (approx. 3'-6") hold same batter and build on the side as indicated by dashed lines above. Alternate header courses (bags placed crosswise) and stretcher courses (bags placed lengthwise).

SKETCH "B"

ESTIMATING DATA:

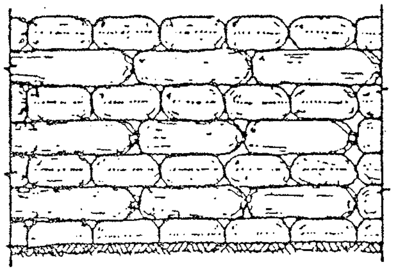
1. Average sandbag weight- approx. 50 lbs.
2. Approx. 1000 sandbags are required for 100 sq. ft. of surface (height x distance).

REVETMENTS

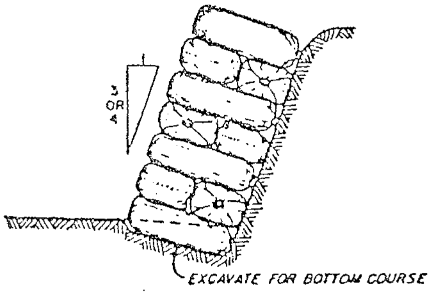
Used for emergency bank protection to prevent under cutting and control course of flood channels.

INSTRUCTIONS:

1. Fill sandbags 2/3 full and tie open ends.
2. Tuck in bottom corners of bag after filling.
3. Place bags perpendicular to slope.
4. Lay stretcher and header courses with choke and side seams in as shown below:



ELEVATION



SECTION

ESTIMATING DATA:

1. Average sandbag weight- approx. 65 lbs.
2. Approx. 320 sandbags are required for each 100 sq. ft. of surface to be reveted.

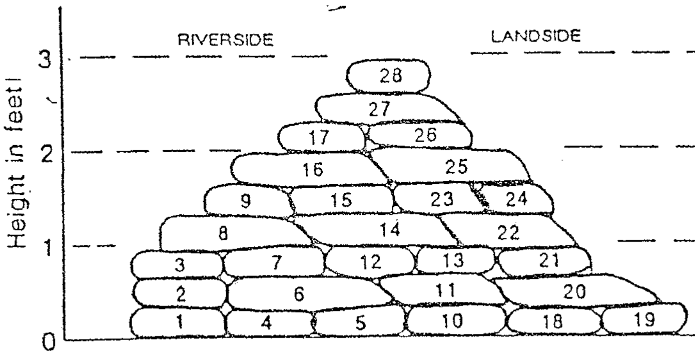
FILL MATERIAL:

The ideal material for filling sandbags is a fine sand or coarse silt. Avoid, as much as possible, the use of coarse gravel and heavy clays.

PAJARO RIVER, CALIFORNIA
(UVAS CREEK LEVEE AT GILROY)

PLATE 5 (1 OF 2)
INSTRUCTIONS FOR PLACING SANDBAGS

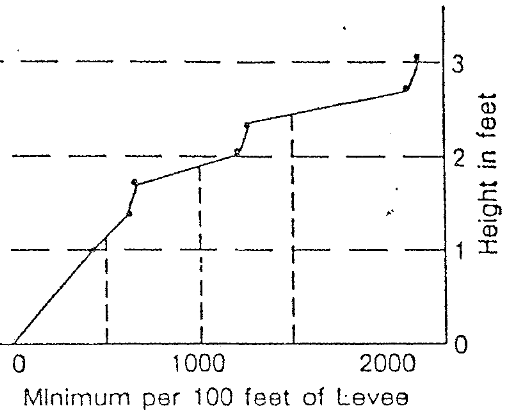
SACRAMENTO DISTRICT
US ARMY CORPS OF ENGINEERS



SANDBAG LEVEE CROSS SECTION

1 0 1 2 3

Scale in feet



NUMBER OF SANDBAGS

Notes:

1. Entire base to be cleared and scarified.

2. Best material for filling sandbags is a fine sand or coarse silt. Avoid, as much as possible, the use of coarse gravel and heavy clays.

3. Fill sandbags 1/2 to 2/3 full, 50 to 60 pounds, and leave enough flap to turn under. Do not tie.

4. Numbers shown on the sandbags are for the general order of placing the sandbags to give the highest protection with the minimum number of sandbags.

5. When bags are placed, flatten out and fill voids by mashing bags with feet and vigorously tramping each course of the levee. This will make the levee section as impervious to water as possible. Alternate direction of sacks and stagger joints wherever practical.

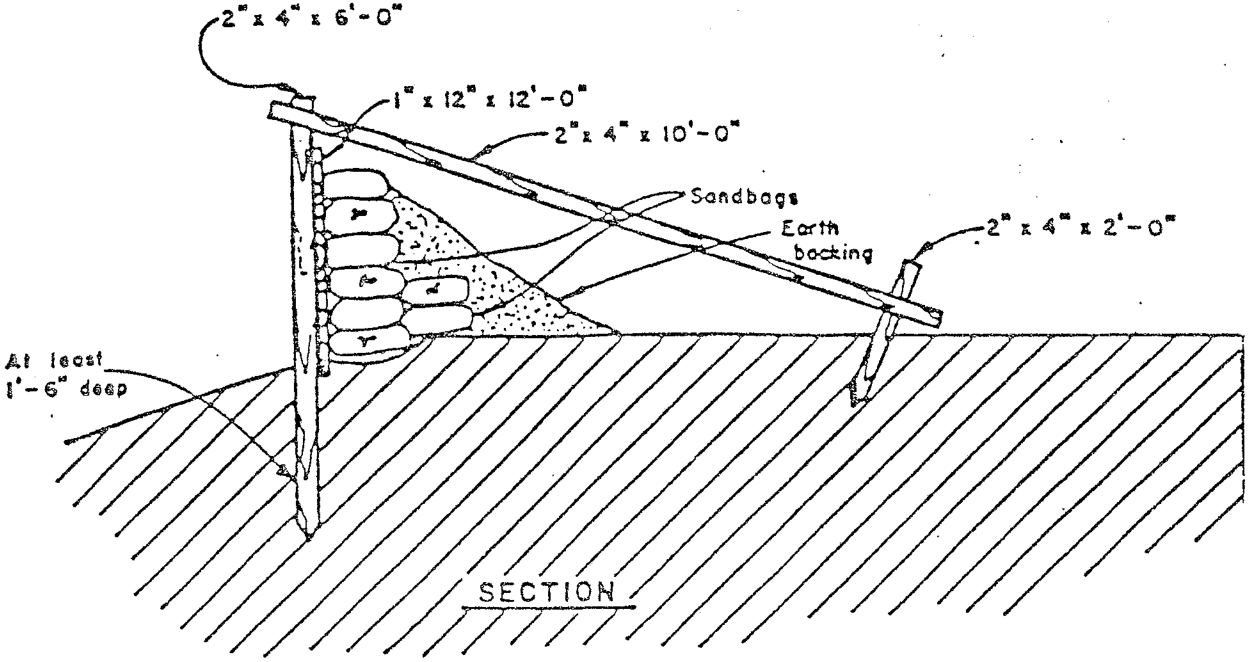
6. The above section is based upon an average in-place sandbag section of 4" x 12" x 18".

PAJARO RIVER, CALIFORNIA
(UVAS CREEK LEVEE AT GILROY)

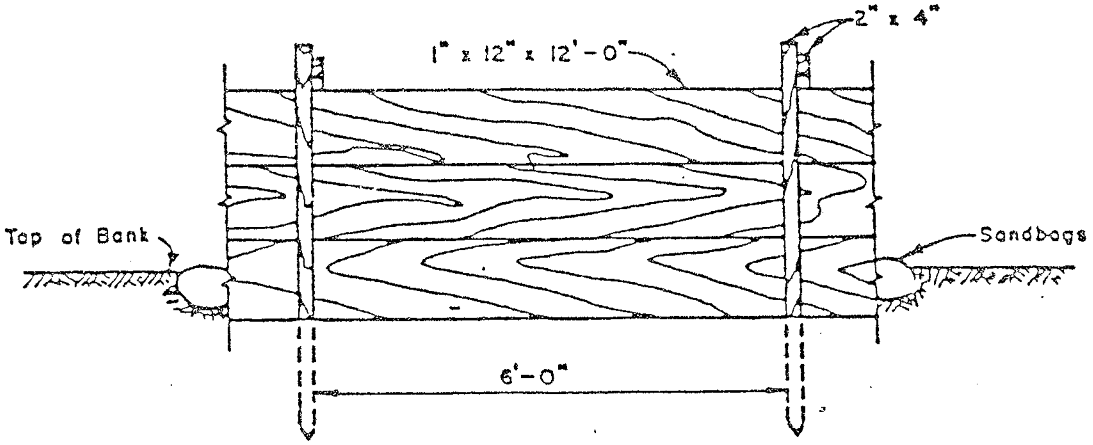
PLATE 5 (2 OF 2)

INSTRUCTIONS FOR PLACING SANDBAGS

SACRAMENTO DISTRICT
US ARMY CORPS OF ENGINEERS



SECTION



FRONT ELEVATION

BILL OF MATERIAL FOR 100
LINEAR FEET OF BANK

LUMBER

25 pieces 1" x 12" x 12'-0"
17 pieces 2" x 4" x 10'-0"
*17 pieces 2" x 4" x 6'-0"
*17 pieces 2" x 4" x 2'-0"
* sharpened

NAILS

1 lb. 8d nails
2 lbs. 16d nails

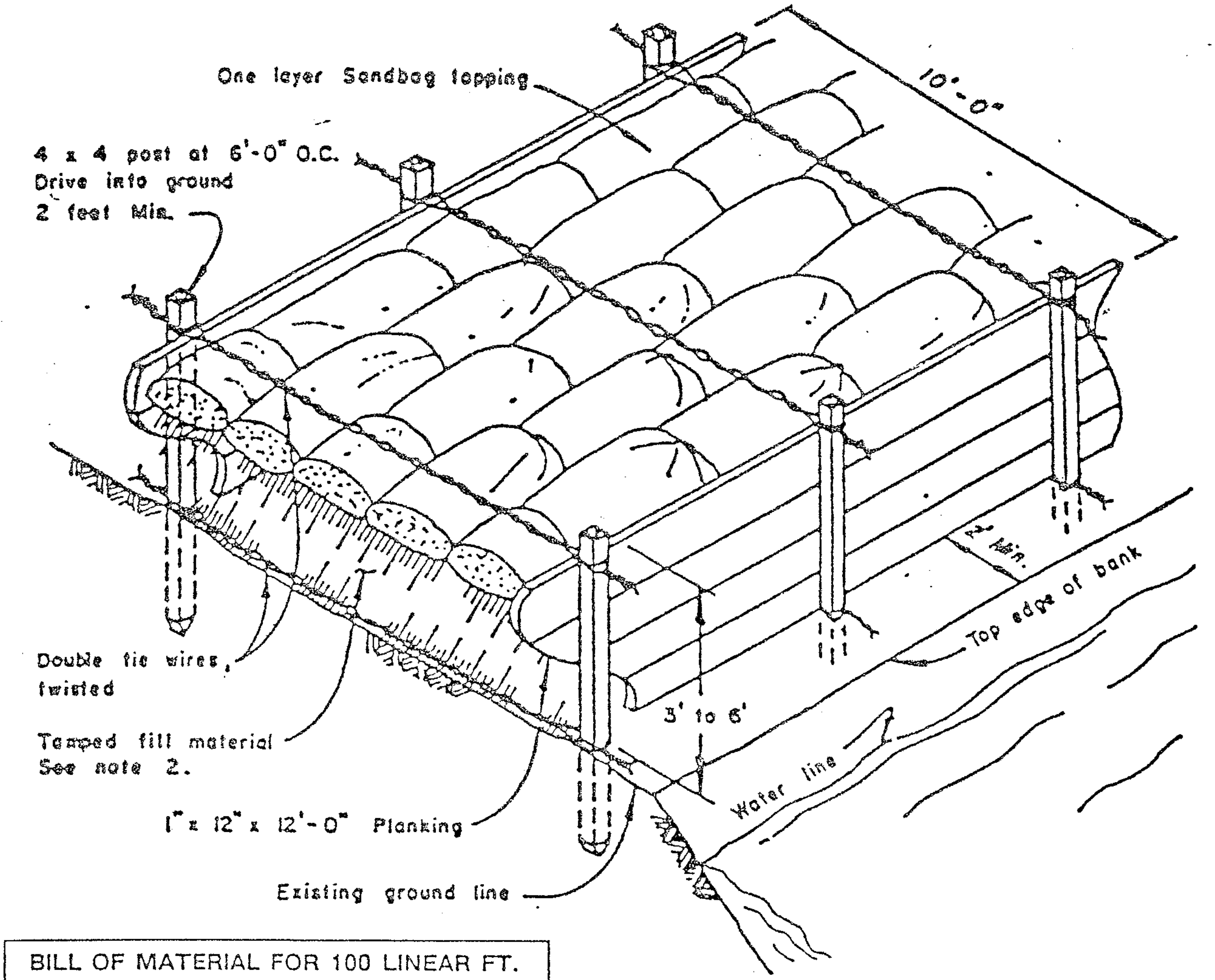
SANDBAGS

120 Bags

PAJARO RIVER, CALIFORNIA
(UVAS CREEK LEVEE AT GILROY)

PLATE 6
LUMBER & SANDBAG TOPPING

SACRAMENTO DISTRICT
US ARMY CORPS OF ENGINEERS


One layer Sandbag topping
4 x 4 post at 6'-0" O.C. Drive into ground 2 feet Min.
10'-0"
2' Min.
Top edge of bank
Double tie wires, twisted
Tamped fill material See note 2.
3' to 6'
Water line
1" x 12" x 12'-0" Planking
Existing ground line

BILL OF MATERIAL FOR 100 LINEAR FT.

4 FEET HIGH

*34 Pieces lumber 4" x 4" x 7'-0"
67 pieces lumber 1" x 12" x 12'-0"
25 lbs. - 12 gauge wire
13 lbs. - 10d nails
600 sandbags
140 CY earth-fill material

5 FEET HIGH

*34 Pieces lumber 4" x 4" x 8'-0"
84 pieces lumber 1" x 12" x 12'-0"
25 lbs. - 12 gauge wire
15 lbs. - 10d nails
600 sandbags
185 CY earth-fill material

6 FEET HIGH

*34 Pieces lumber 4" x 4" x 9'-0"
100 pieces lumber 1" x 12" x 12'-0"
25 lbs. - 12 gauge wire
17 lbs. - 10d nails
600 sandbags
222 CY earth-fill material

* Sharpened

NOTES:

1. This method may be used when flood flows threaten to overtop the bank.

2. Inside walls of planking should be lined with canvas or polyethylene sheeting when fill material has a soupy consistency.

3. Moderate to heavy vegetation should be cleared to discourage water seepage.

PAJARO RIVER, CALIFORNIA
(UVAS CREEK LEVEE AT GILROY)

PLATE 7

MUD BOX LEVEE TO PREVENT OVERTOPPING

SACRAMENTO DISTRICT
US ARMY CORPS OF ENGINEERS